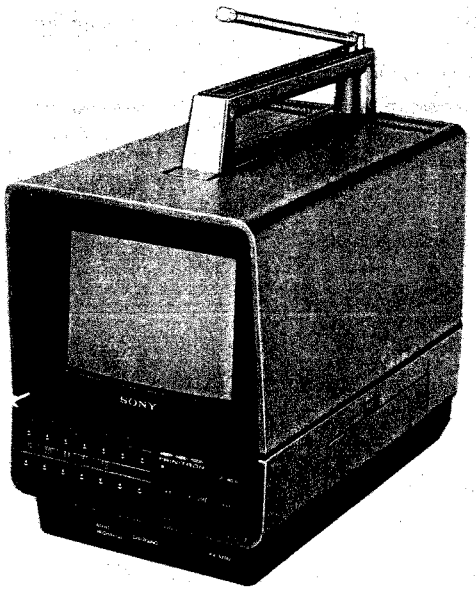
KV-5200
BP-37W

Canadian Model

Chassis No. SCC-239B-B



TRINITRON®
COLOR TV

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DU CIRCUIT QUI SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT SONT IDENTIFIÉS DANS CE MANUEL. SUIVRE LES PROCÉDURES QUAND LES COMPOSANTS CRITIQUES SONT REMPLACÉS OU LE FONCTIONNEMENT IMPROPRE EST SUSPECTÉ.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

SONY®
SERVICE MANUAL

1893

SPECIFICATIONS

Television System: Canadian TV standards

Color System: NTSC

Picture Tube: 13 cm, 5" (screen measured diagonally)
55° deflection TRINITRON system

Semiconductors: 48 transistors, 2 FETs, 84 diodes, and 11 ICs

Antennas: VHF/UHF: Telescopic antenna
75 Ω external antenna jack

Channel Coverage: VHF channels 2 – 13
UHF channels 14 – 83
(a total of up to 14 preselected channels)

Intermediate Frequencies:
Picture i-f carrier: 45.75 MHz
Color subcarrier: 42.17 MHz
Sound i-f carrier: 41.25 MHz

Sound System: 4.5 MHz intercarrier
Output power: 0.6 W (at max.)
Speaker: 8 cm (3¼ inches) dia. 8 Ω

Video System: R.G.B cathode drive

Automatic Controls:
ABL (automatic brightness limiter)
ACC (automatic color control)
ACK (automatic color killer)
ADG (automatic degaussing)
AFC (automatic frequency control)
AFT (automatic fine tuning)
AGC (automatic gain control)
ANC (automatic noise canceller)
APC (automatic phase control)
AVR (automatic voltage regulator)

Anode Voltage: 13.0 kV at zero beam current

Power Requirements: 120 V ac, 60 Hz

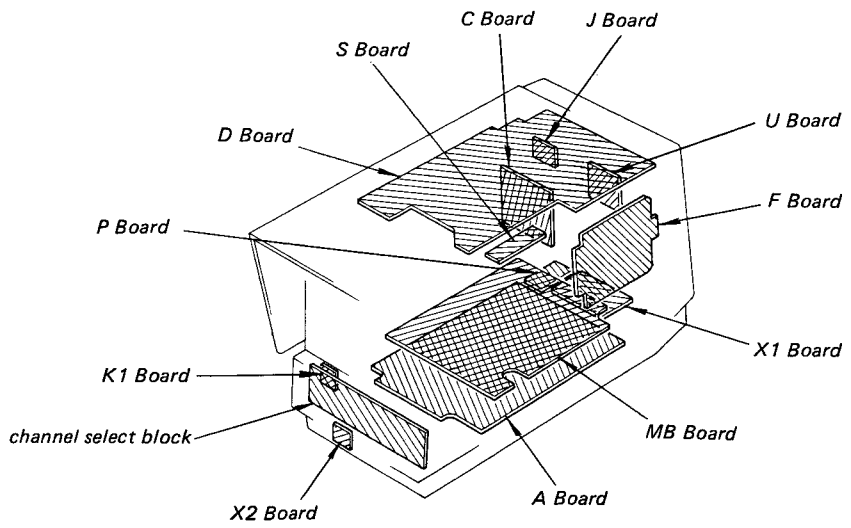
Power Consumption: 27 W ac (max.)
17 W dc (12 V)
17 W dc (24 V)

Dimensions: Approx. 162 (w) x 269 (h) x 330 (d) mm
6 3/8 (w) x 10 5/8 (h) x 13 (d) inches
including projecting parts and controls

Net Weight: Approx. 6 kg (13 lb 4 oz)

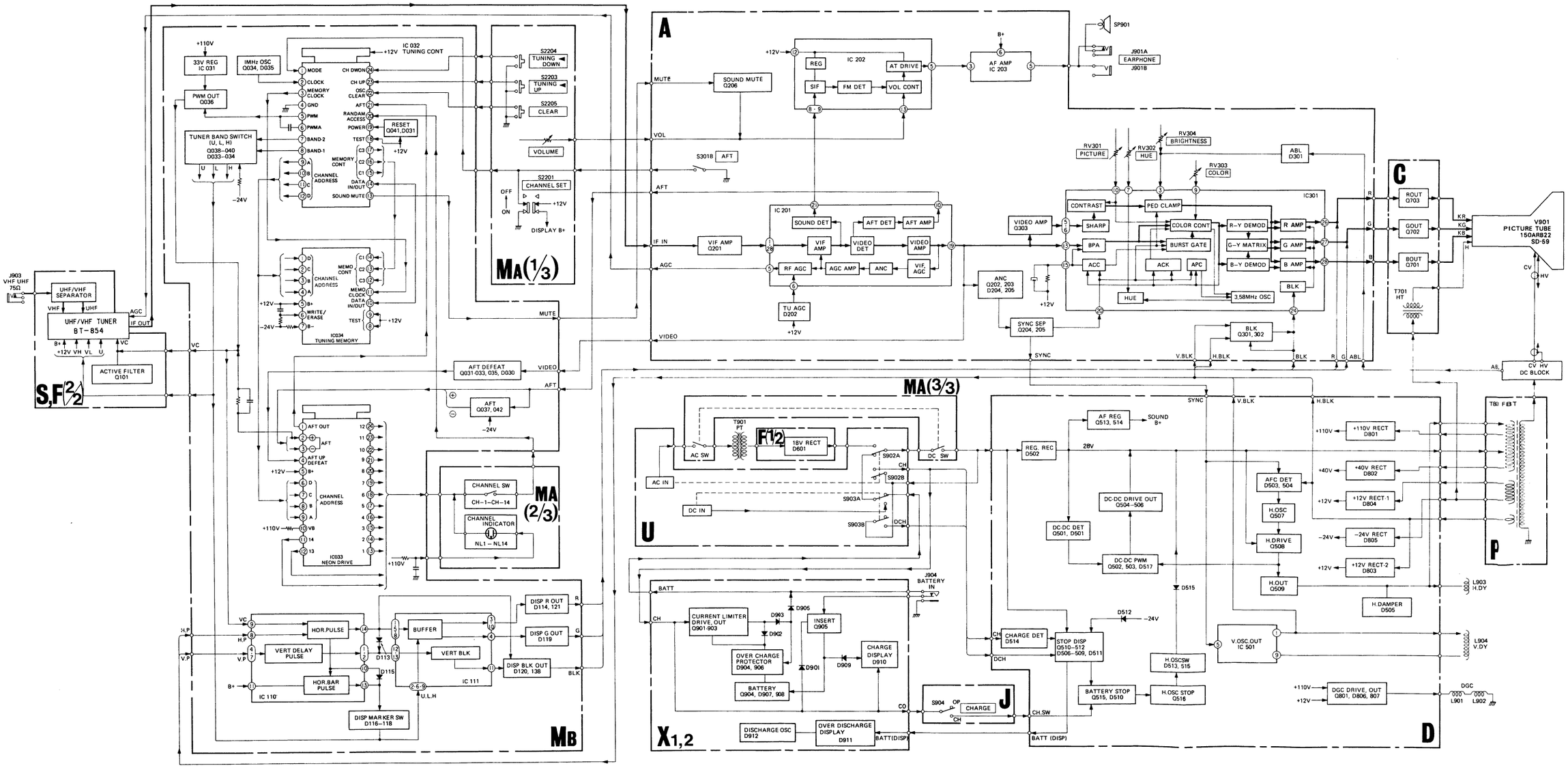
Accessories Supplied:
Earphone (ME-20B)
Antenna connector (EAC-6A)
AC power cord
Channel sheets
Channel number segments
Instruction manual

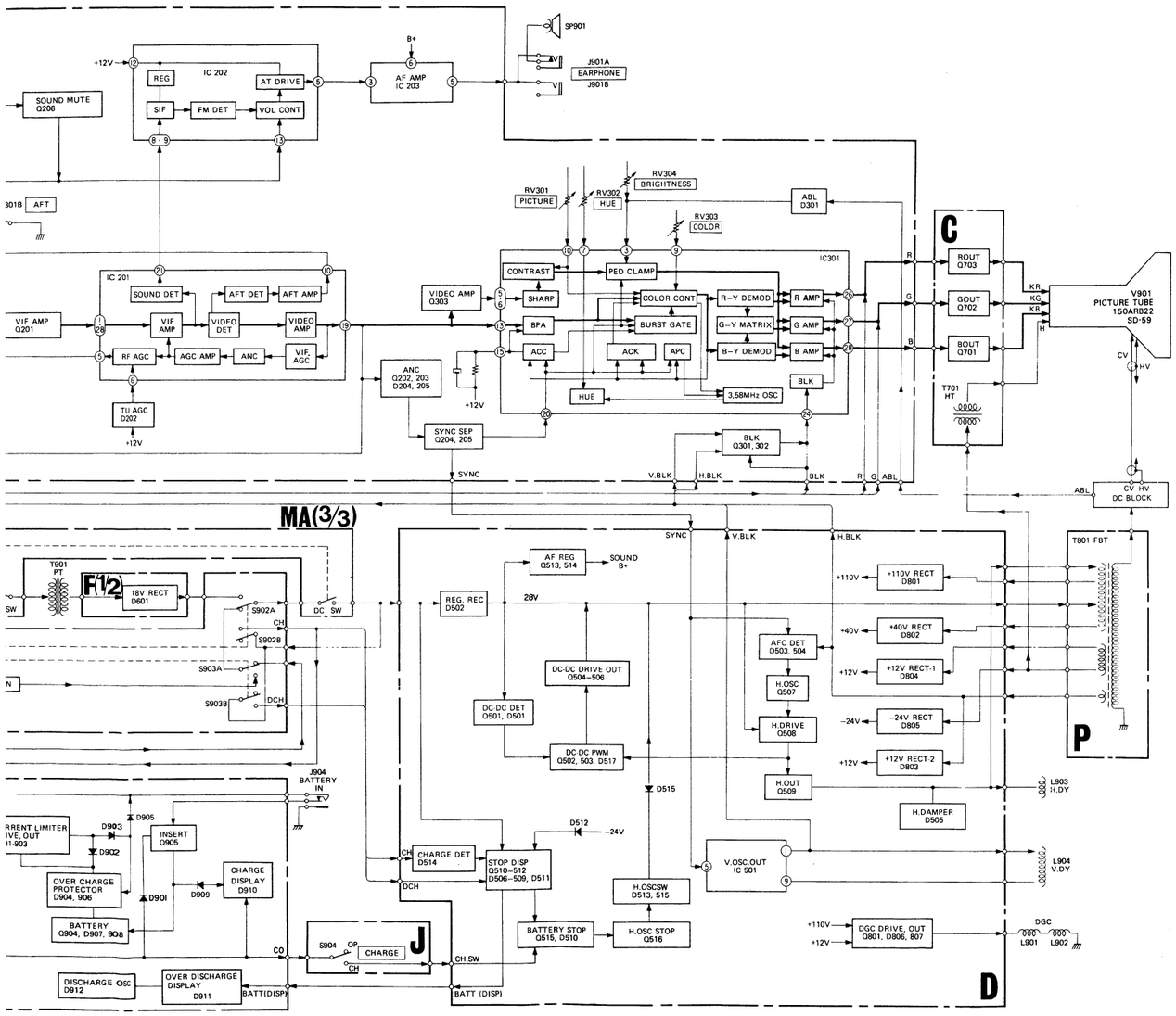
CIRCUIT BOARD LOCATION



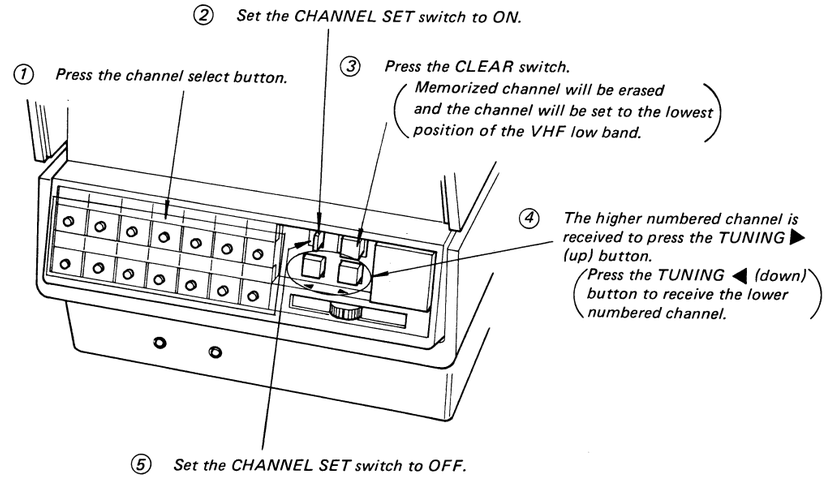
SECTION 1
OUTLINE

1-1. BLOCK DIAGRAM





1-2. CHANNEL PRESETTING


② Set the CHANNEL SET switch to ON.
① Press the channel select button.
③ Press the CLEAR switch.
Memorized channel will be erased and the channel will be set to the lowest position of the VHF low band.
④ The higher numbered channel is received to press the TUNING ▶ (up) button.
Press the TUNING ◀ (down) button to receive the lower numbered channel.
⑤ Set the CHANNEL SET switch to OFF.

1-3. CIRCUIT DESCRIPTION

1. Screen Display Circuit

The tuning indicator in the former TV receivers uses LEDs but a screen display system is employed in this receiver. The system displays a tuning condition on the picture tube as shown in Fig. 1. Comparing with the former indicators using five LEDs, this system has the following features.

(1) The signal search condition is indicated clearly for easy tuning operation.
(2) The LED mounting space is not necessary.
(3) The current consumption is small (24mW).
(4) The receiving band can be displayed by the color of the display band (Red for VHF LOW, Yellow for VHF HIGH, and Green for UHF)

The block diagram of the screen display system is shown in Fig. 2.

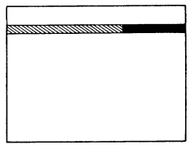


Fig. 1.

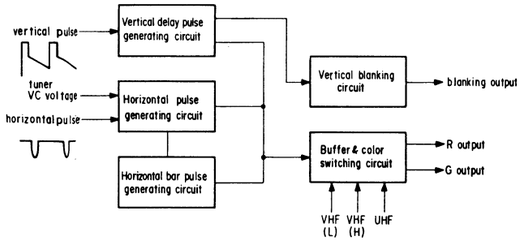


Fig. 2.

1) Vertical Delay Pulse Generating Circuit

This circuit blanks out the picture for the tuning band width shown in Fig. 3. Two comparators are used for obtaining an optional pulse width and delay time in the vertical sync. The outputs of the comparators are composed for generating a pulse.

The output of the comparator becomes high when the voltage at the + terminal is higher than the one at – terminal and the output turns to low when the voltage at + terminal becomes lower than the one at – terminal.

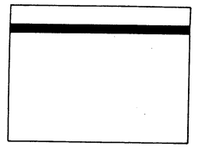


Fig. 3.

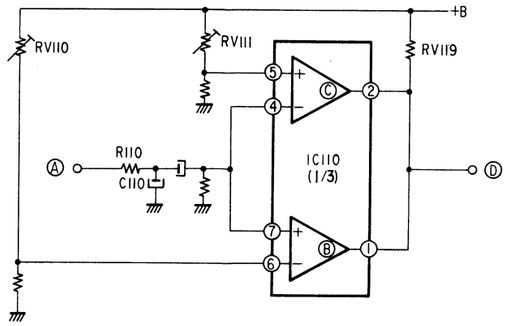


Fig. 4.

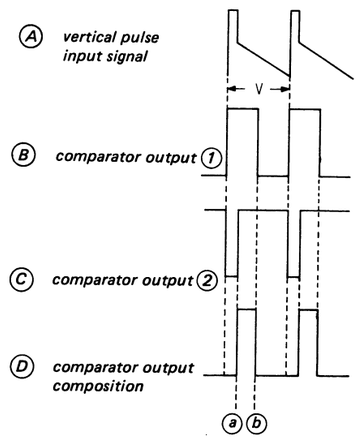


Fig. 5.

The vertical pulse in Ⓐ is applied on pins 4 and 7 of IC110 through the low pass filter (R110 and C110) in Figs. 4 and 5. The constant voltage is applied on pins 5 and 6 of IC110 from B+ line through RV111 and RV110. Pulses Ⓑ and Ⓒ are outputted from pins 1 and 2 of IC110 respectively and the pulses are composed of, pulse Ⓓ being obtained. This resultant pulse blanks out the picture portion whose width is equal to the band width of the tuning indicator.

RV111 controls the timing at point ⓐ and RV110 the one at point ⓑ (Fig. 5). Since jitters occur if vertical pulse Ⓐ is inputted directly to the comparator, the pulse is applied to the comparator through the low pass filter.

2) Horizontal Pulse Generating Circuit

This circuit uses a comparator for converting the PWM signal to the signal whose pulse period is equal to the horizontal period corresponding to the VC voltage.

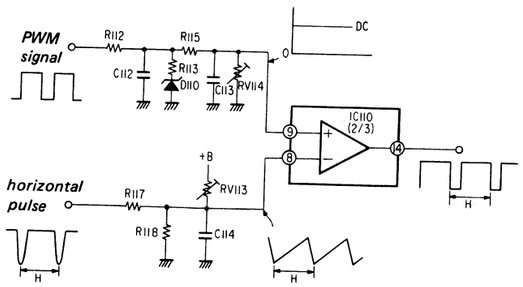


Fig. 6.

The PWM signal is converted to a direct current in the two stage ripple filters (consisting of R112, C112, R115 and C113) and it is applied on pin 9 of IC110. The horizontal pulse is integrated in R117 and C114 to be the sawtooth waveform signal of the horizontal period and the signal is applied on pin 8. As a result, the horizontal period pulse corresponding to the VC voltage is obtained at pin 14. D110 is for the linearity correction of the VC voltage and prevents the band length from extending excessively in the right direction. The reason why the two stage ripple filters are used is to shape the band edges.

3) Horizontal Bar Pulse Generating Circuit

This circuit functions to put the bar marker on the tuning band as shown in Fig. 7.

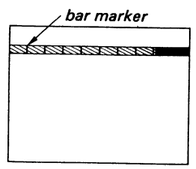


Fig. 7.

The voltage at pin 10 of IC110 increases with the charge time constant determined by R122 and C115 in Fig. 8. When the voltage at pin 10 becomes higher than the one at pin 11, pin 13 turns to low from high and the potential in C115 is discharged through D115. Then the pulse shown in Fig. 8 is outputted from pin 13.

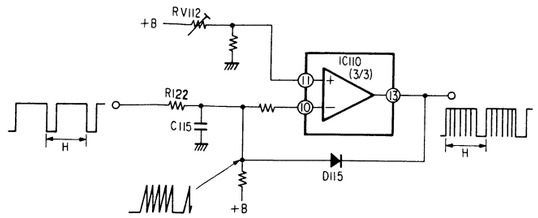


Fig. 8.

4) Vertical Blanking Circuit

The output from the vertical delay pulse generating circuit is applied to the blanking circuit on the A board through an AND circuit in IC111. (See Fig. 9.) The AND circuit is used as a buffer and a driver.

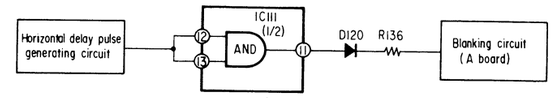
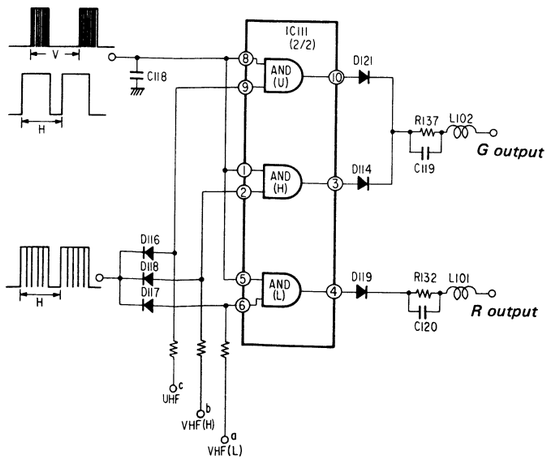


Fig. 9.

5) Buffer and Color Selecting Circuit



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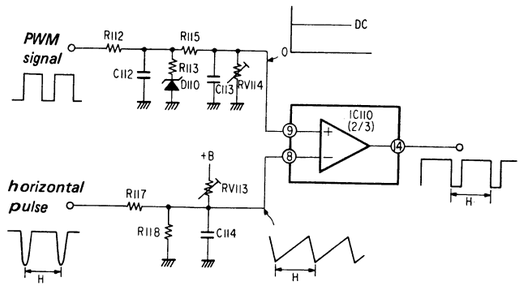

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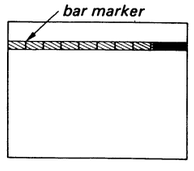

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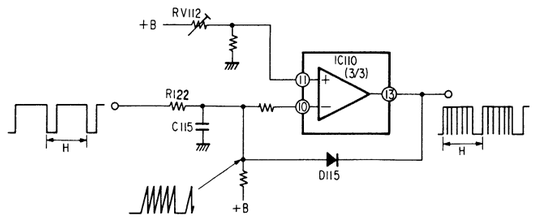

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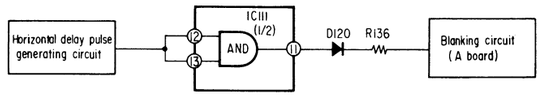

Fig. 9.

5) Buffer and Color Selecting Circuit

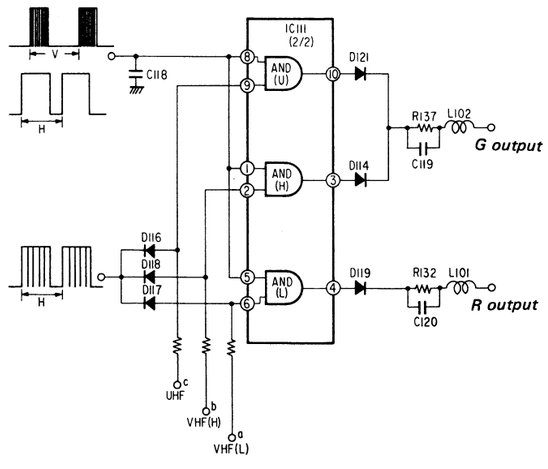

Fig. 10.

Three terminals a, b, and c function as the switches of the AND circuits in Fig. 10. When the terminal is at the high level, the output of the AND circuit conducts. Table 1 shows the voltage applied on each terminal of a, b and c.

terminal / received band	a (VL)	b (VH)	c (U)
VHF LOW	12V	−12V	0V
VHF HIGH	12V	12V	0V
UHF	0V	−12V	12V

Table 1

When the TV receiver receives the VHF LOW band, the AND (L) conducts and the red band whose width is proportional to the VC voltage is displayed. Similary when the receiver receives the VHF HIGH band, the AND (H) conducts and the yellow band is displayed and when it receives the UHF band, the AND (U) conducts and the green band is displayed. R132 and R137 are the resistors to determine the brightness of the band. C119 and C120 are to shape the outline of the band rapidly. L101, L102, C118 and C121 are for the interference in the TV receiver itself.

6) Other Circuits

The reason why the vertical blanking pulse is connected to the blanking circuit on the A board through D123, R138, and the M3 connector is to blank out the vertical delay pulse.

The composite waveform of the comparator outputs illustrated in Fig. 5 is the ideal waveform and a pulse for 3H appears on the rising section of the vertical pulse and the pulse appears on the picture as a flyback line. (See Fig. 11.)

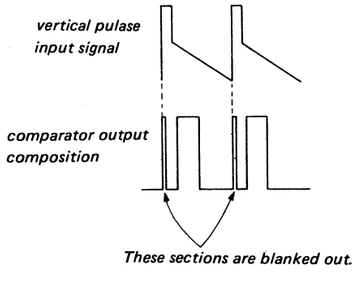

Fig. 11.

The B+ voltage for the picture tube display circuit is supplied from the +12V line when the CHANNEL SET switch is in the ON position. Since the fluctuation of the B+ voltage have influence upon the comparator, a zener diode (D122) is inserted for stability.

2. Degaussing Circuit

The degaussing circuit in the conventional 5" color television sets (KV-5000 and KV-5100) was the manual system but the degaussing in this set can be done automatically upon the turning-on of the power switch by the employment of a LEC transistor (2SD1015).

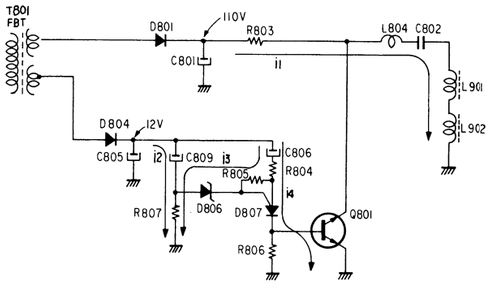

Fig. 12.

The degaussing circuit is shown in Fig. 12. When the power switch is turned on, the flyback transformer (T801) acts, D801 and C801 producing 110V and D804 and C805 12V. Current i_1 flows in the 110V line and C808 is charged by the time constant determined by C808 x R803.

Current i_2 flows in the +12V line and C809 is charged by the time constant determined of C809 x R807. Since the relationship between the time constants are C809 x R807 > C808 x R803, the charging of C809 is faster. When the charging current to C809 decreases after a little while and the voltage across R807 lowers, the zener diode (D806) turns on, the gate potential of the SCR (D807) lowers, and the SCR turns on. Then the base current of the LEC transistor (Q801) flows, the LEC transistor turns on, the degaussing resonance current flows, and a damped oscillation of approx. 3kHz occurs. (See Fig. 13 and 14.)

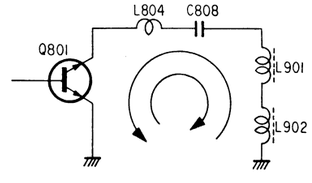

Fig. 13.

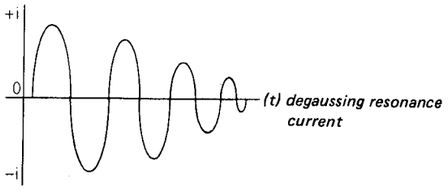

Fig. 14.

Since the time constant of C806 x R804 is selected longer than the time of the degaussing resonance oscillation, current i4 flows after a while after the stop of the degaussing resonance oscillation.

3. Battery Charge, Discharge, and Protection Circuits

The circuitry shown in Fig. 15 is the one extracted from the circuits on the D, X1, X2, U, and J boards. The following description on the circuit operation is made following the circuitry.

1) Horizontal Oscillation Control Circuit

This circuit stops the horizontal oscillation when the power supply voltage increases or the high tension increases higher than a certain level due to some reason. If the high tension increases, the amplitude of the horizontal pulse at point Ⓐ becomes large and the peak-rectified −24V in D805 and C807 increases at point Ⓑ.

When −24V line becomes lower than −27.8V, D512 turns on and the gate voltage of D510 decreases. When the gate voltage becomes lower than the offset voltage (the value lower than the gate reference voltage by 0.4 ± 0.1V), D510 turns on. Since Q516 turns on and the B+ (approx. 10V) of the horizontal oscillation circuit is connected to earth through D515 and Q516, the B+ lowers drastically, the horizontal oscillation stops, and the "No Raster" symptom appears.

2) Battery Charging Circuit

This circuit can charges the battery only in the AC-IN state. When the power cord is plugged in the AC connector and the power switch of the set is turned on, the power (AC 120V) is rectified in D601 and C602 on the F board via the power switch (AC) and the power transformer. (Refer to the schematic diagram in the service manual.) The resultant dc voltage is supplied to the DC line on the D board via S902A and the power switch (DC) shown in Fig. 15. The current from the DC line is charged in the battery via S902B and the current regulator circuit consisting of Q901, Q902 and Q903 on the X1 board. The current flows through R915 to D910 indicating the charging. The battery is charged with approx. 215mA when the CHARGE switch (S904) is in the OPERATE position and with approx. 540mA when in the CHARGE position.

The battery is charged while the picture can be viewed when the CHARGE switch is in the OPERATE postion. When it is in the CHARGE position, the picture disappears and only the battery charging is performed. The reason why the picture disappears when the switch is in the CHARGE position is that the bias voltage is applied to the base of Q515 from the DC line (point Ⓒ) via R902, R901 and the CHARGE switch (S904) and Q515 and Q516 turn on, the horizontal oscillation stopping.

The voltage at point Ⓓ increases with the charging. When the voltage increases higher than approx. 16V, Q904 and D906 turn on so that the current flowing to the battery is decreased for prevention of the excessive charging. D902 is inserted for protection of the battery at the short of the emitter and corrector circuit of Q903.

When the dc cord is inserted into the BATTERY IN (J904) during the AC power is connected, Q905 turns off and Q904 turns on so that D906 does not turn on.

When the dc cord is not inserted, Q905 is on, D910 does not indicate the charge indication, D901 is on, and the horizontal oscillation is prevented from stopping even if the CHARGE switch is in the CHARGE switch is in the CHARGE position.

3) Battery Excessive Discharge Protection Circuit

This circuit stops the horizontal oscillation of the set for protection of the battery from the excessive discharge when the battery voltage becomes below 9.8V while the set is operated on the battery.

Since S902A & B and S903A & B are in the OFF state when the set is operated on the battery, D506 and D508 turn on, the base voltage of Q510 decreases, and Q510 and Q511 turn on when the DC line voltage becomes lower than a certain level. Q512 turns on, and C903 is charged. When the anode voltage of D912 becomes larger than the offset voltage, D912 turns on and the potential charged in C903 discharges, D912 turning off. The repetition of the above operation makes D911 blinks to indicate the excessive discharge about 15 to 30 seconds before the stop of the horizontal oscillation. Then the gate voltage of D510 lowers, D510 turns on, turning on Q516, and the horizontal oscillation is stopped.

The reverse bias is applied to the cathode of D508 through D514, R551 and D507 in the AC IN mode, which makes D508 turn off so that the horizontal oscillation is protected from stopping when the DC line voltage decreases.

The reverse bias is applied on the cathode of D508 through R550 and D507 in the EXT DC IN mode as well as in the AC IN mode.

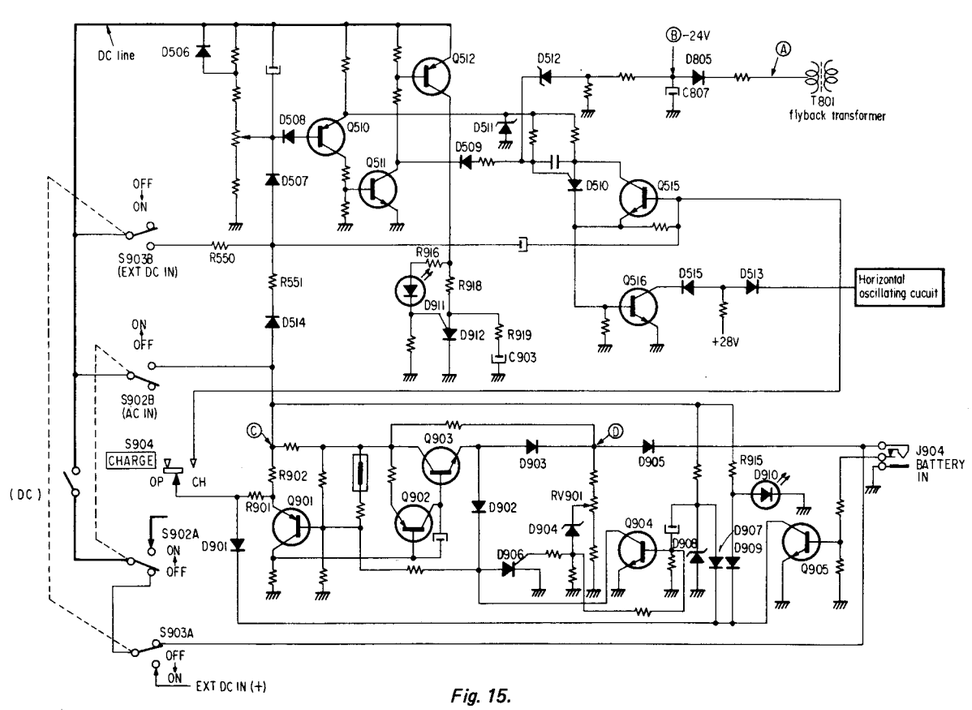

Fig. 15.

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When the dc cord is not inserted, Q905 is on, D910 does not indicate the charge indication, D901 is on, and the horizontal oscillation is prevented from stopping even if the CHARGE switch is in the CHARGE switch is in the CHARGE position.

3) Battery Excessive Discharge Protection Circuit

This circuit stops the horizontal oscillation of the set for protection of the battery from the excessive discharge when the battery voltage becomes below 9.8V while the set is operated on the battery.

Since S902A & B and S903A & B are in the OFF state when the set is operated on the battery, D506 and D508 turn on, the base voltage of Q510 decreases, and Q510 and Q511 turn on when the DC line voltage becomes lower than a certain level. Q512 turns on, and C903 is charged. When the anode voltage of D912 becomes larger than the offset voltage, D912 turns on and the potential charged in C903 discharges, D912 turning off. The repetition of the above operation makes D911 blinks to indicate the excessive discharge about 15 to 30 seconds before the stop of the horizontal oscillation. Then the gate voltage of D510 lowers, D510 turns on, turning on Q516, and the horizontal oscillation is stopped.

The reverse bias is applied to the cathode of D508 through D514, R551 and D507 in the AC IN mode, which makes D508 turn off so that the horizontal oscillation is protected from stopping when the DC line voltage decreases.

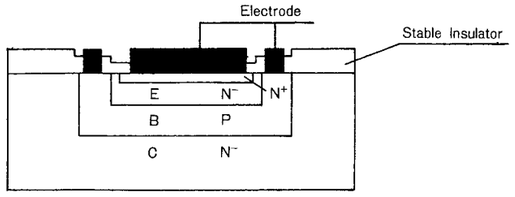
The reverse bias is applied on the cathode of D508 through R550 and D507 in the EXT DC IN mode as well as in the AC IN mode.

1-4. LEC TRANSISTOR (2SD1015)

LEC transistor is used in the demagnetization circuit of KV-5200. This transistor is symmetric type and is designed to manifest the best performance of LEC structure and this can with-stand high voltage. LEC stands for Low Emitter Concentration.

1. Structure

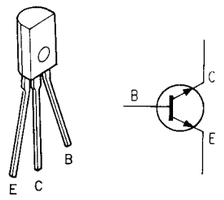
Silicon NPN LEC type transistor.



2. Characteristics

1) Symmetric transistor
2) High voltage resistance
3) High h_{FE}
4) Low saturation voltage

3. External View and Circuit Symbols

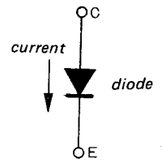


4. Operation

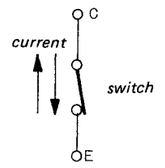
In the general NPN type transistors, when the bias voltage is supplied to the base, current flows from the collector towards the emitter; however, in LEC transistors, current can be flown in both directions.

In Fig. 3, conditions of collector and emitter during supplying bias voltage to the base are shown by equivalent circuits.

The general NPN transistor is replaced to a diode in equivalent circuit, but the LEC transistor to a switch.



Equivalent circuit of general NPN type transistors



Equivalent circuit of LEC transistor

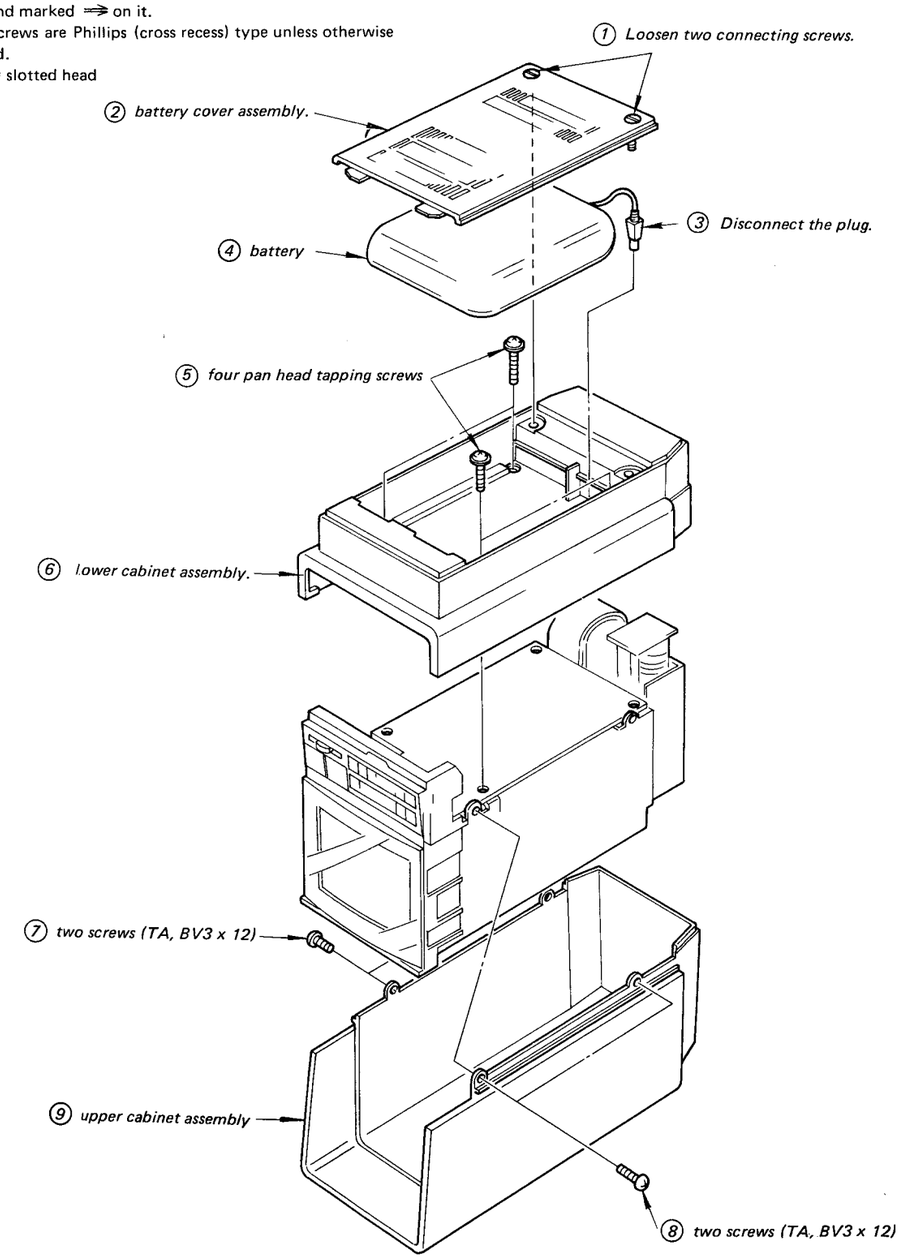
5. Checking method of LEC transistors is the same as that of NPN type transistors.

SECTION 2
DISASSEMBLY

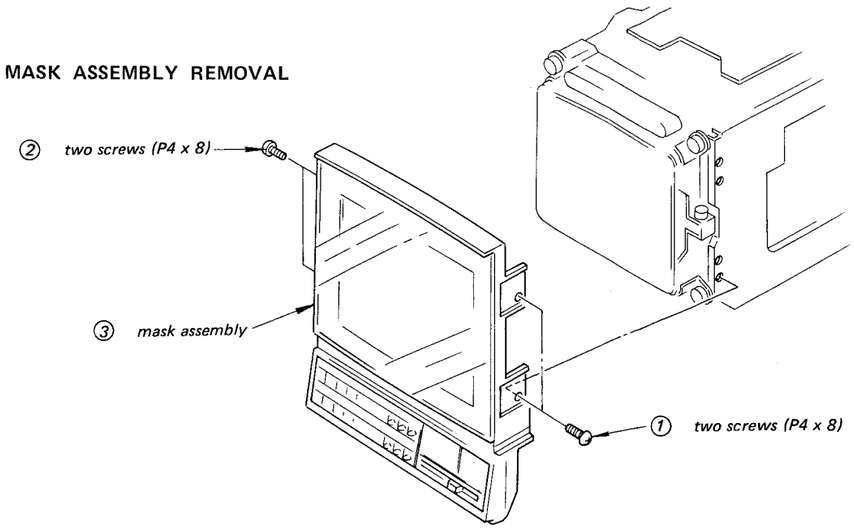
2-1. CABINET REMOVAL

Note:

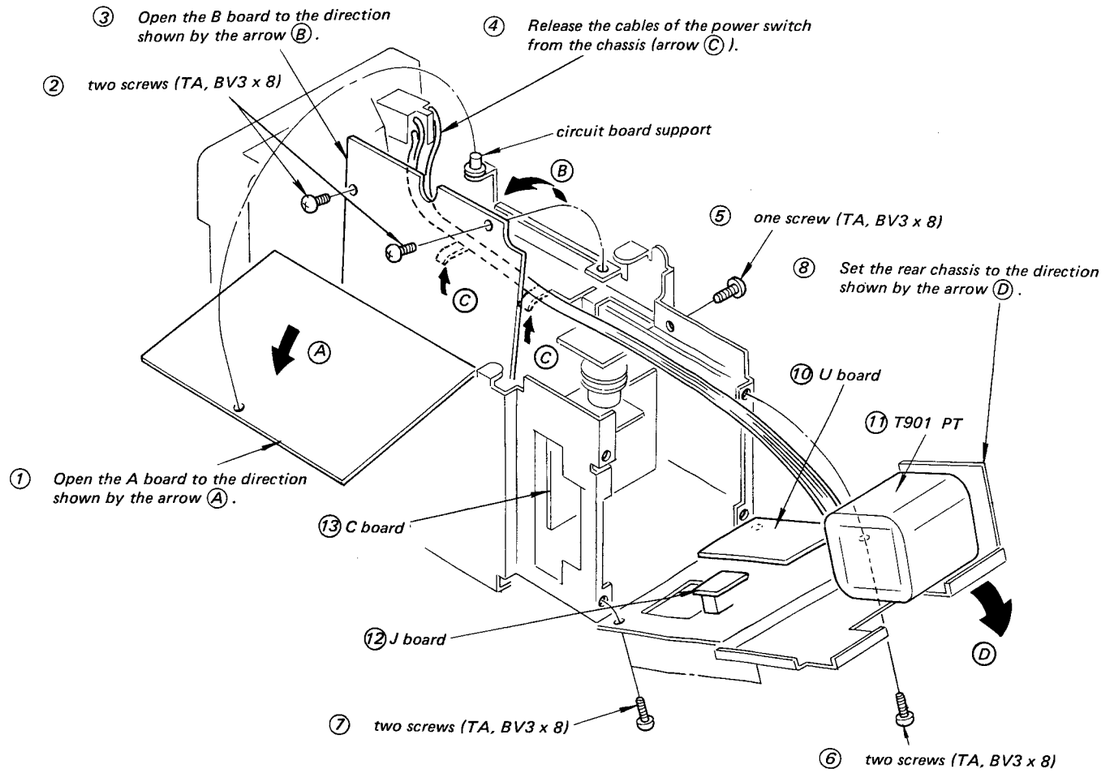
- Follow the disassembly procedure in the numerical order given.
- When removing the rear cover, take out all the screws around marked ⇒ on it.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head


① Loosen two connecting screws.
② battery cover assembly.
③ Disconnect the plug.
④ battery
⑤ four pan head tapping screws
⑥ lower cabinet assembly.
⑦ two screws (TA, BV3 x 12)
⑧ two screws (TA, BV3 x 12)
⑨ upper cabinet assembly

2-2. MASK ASSEMBLY REMOVAL



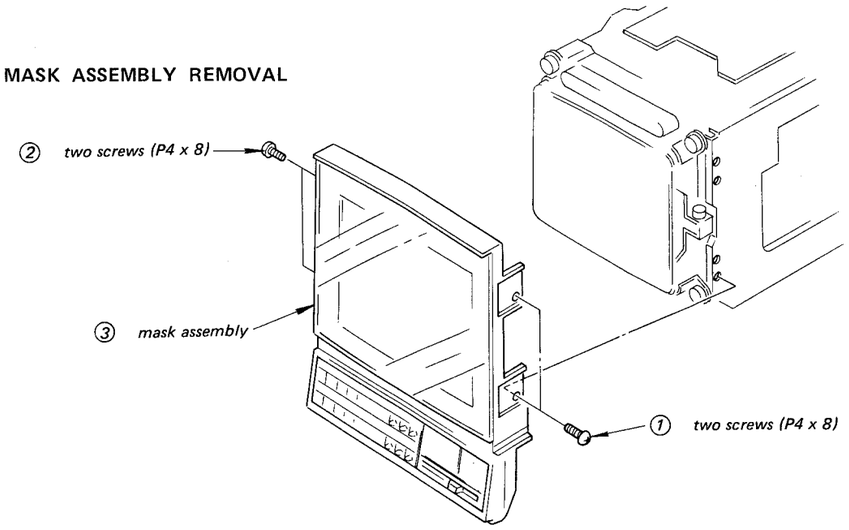
2-3. REAR CHASSIS ASSEMBLY REMOVAL


③ Open the B board to the direction shown by the arrow (B).
④ Release the cables of the power switch from the chassis (arrow (C)).
② two screws (TA, BV3 x 8)
circuit board support
B
⑤ one screw (TA, BV3 x 8)
⑧ Set the rear chassis to the direction shown by the arrow (D).
C
C
A
⑩ U board
⑪ T901 PT
① Open the A board to the direction shown by the arrow (A).
⑬ C board
⑫ J board
D
⑦ two screws (TA, BV3 x 8)
⑥ two screws (TA, BV3 x 8)

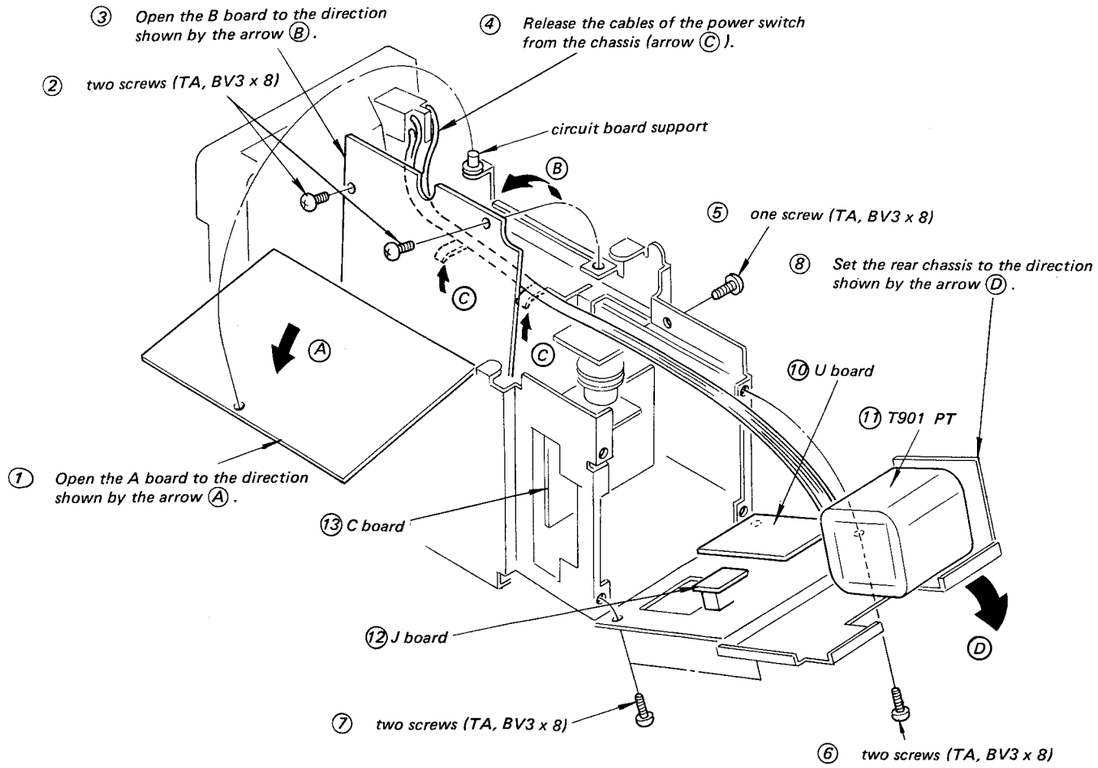
2-4.

2-5.

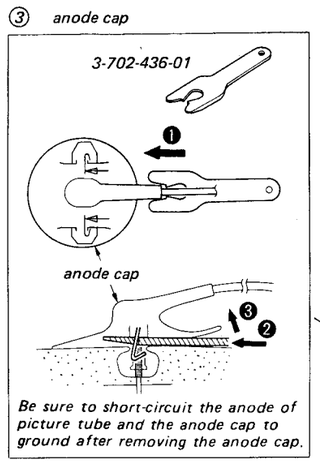
2-2. MASK ASSEMBLY REMOVAL

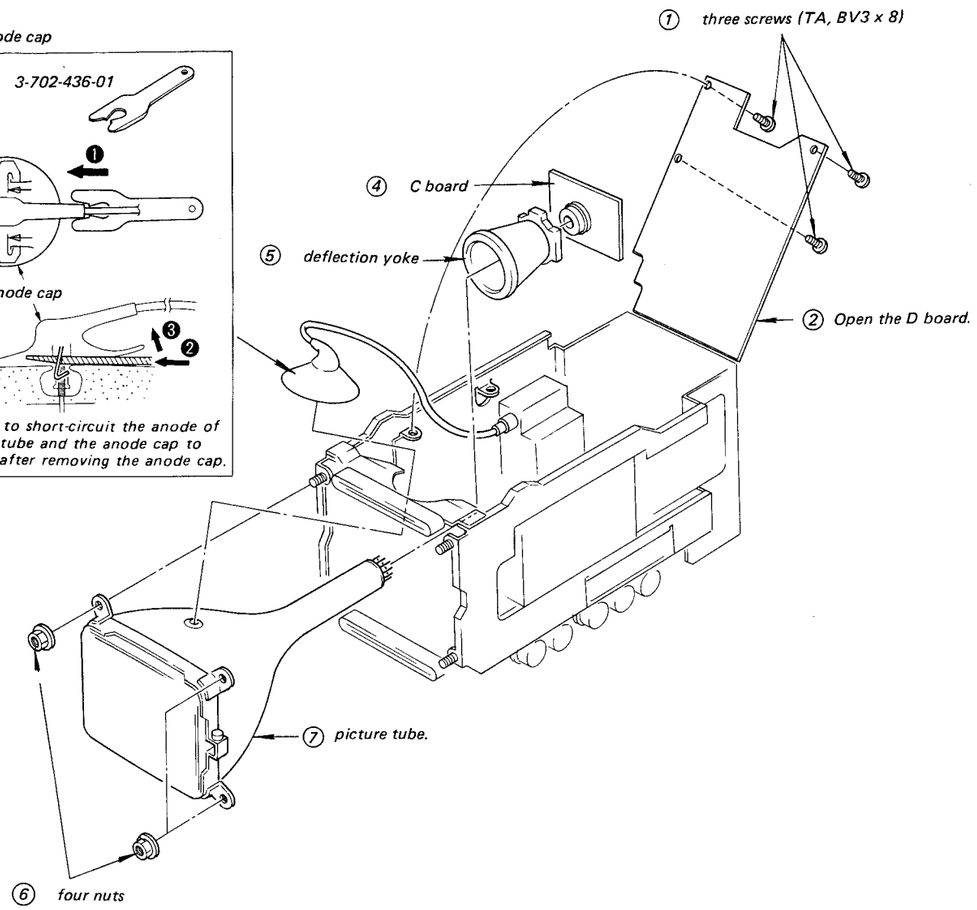


2-3. REAR CHASSIS ASSEMBLY REMOVAL

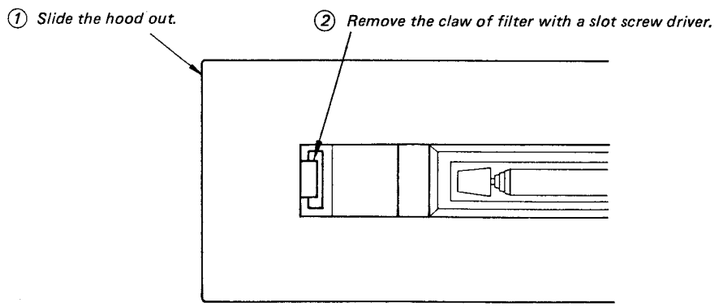

③ Open the B board to the direction shown by the arrow (B).
④ Release the cables of the power switch from the chassis (arrow (C)).
② two screws (TA, BV3 x 8)
circuit board support
B
⑤ one screw (TA, BV3 x 8)
⑧ Set the rear chassis to the direction shown by the arrow (D).
C
A
C
⑩ U board
⑪ T901 PT
① Open the A board to the direction shown by the arrow (A).
⑬ C board
⑫ J board
D
⑦ two screws (TA, BV3 x 8)
⑥ two screws (TA, BV3 x 8)

2-4. PICTURE TUBE REMOVAL


③ anode cap
3-702-436-01
❶
anode cap
❸
❷
Be sure to short-circuit the anode of picture tube and the anode cap to ground after removing the anode cap.



2-5. FILTER REMOVAL



SECTION 3
SETUP ADJUSTMENTS

3-1. LANDING ADJUSTMENTS

1) Receive white pattern from the color-bar/pattern generator.
2) Turn BRIGHT and PICTURE controls fully clockwise.
3) Face the set toward East (or West) and demagnetize the screen with a demagnetizer.
4) Adjust purity magnets as shown in Fig. 3-1. (zero magnetic field).

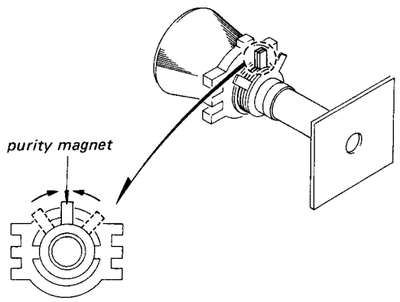


Fig. 3-1.

5) Slide the deflection yoke as far forward as it will go.
6) Disconnect one leads of R318 and R319 on A board. (Fig. 3-2)

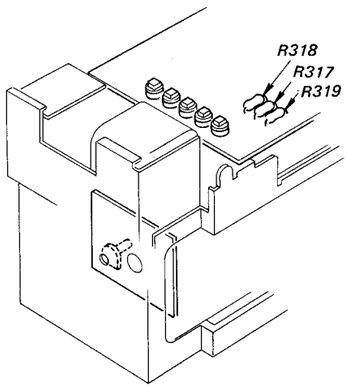


Fig. 3-2.

7) Adjust the purity control to center the vartical green band as shown in Fig. 3-3.

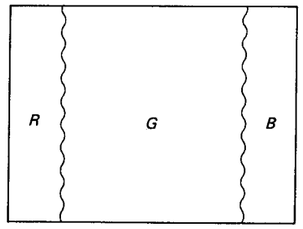


Fig. 3-3.

8) Slide the deflection yoke back for a uniform green screen.
9) Connect R318 on A board and disconnect one leads of R317 and R319 and then make red raster on the whole screen by repeating steps 7 and 8.
10) Connect R319 on A board and disconnect one leads of R317 and R318 and then make blue raster on the whole screen by repeating steps 7 and 8.
11) Tighten the deflection yoke screw after completing steps 6 through 10.

- In case of mislanding at screen corners.
  1) Stick the magnet from the funnel side to the deflection yoke surrounding where mislanding arises as shown in Fig.s 3-4. and 3-5.
  2) Demagnetize the screen after sticking the magnet.

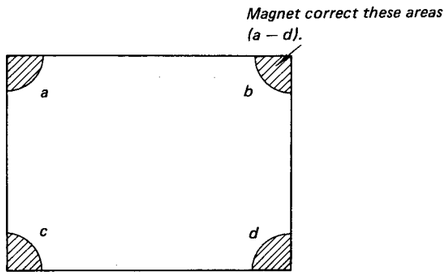


Fig. 3-4.

- Fineal Confirmation
  After adjustments, check that there is no mislanding by facing the set towards East, West, North and South directions.

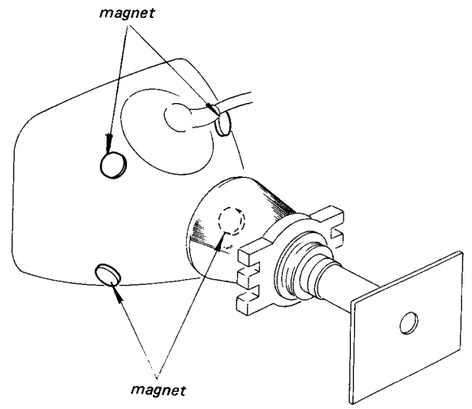


Fig. 3-5.

3-2. CONVERGENCE ADJUSTMENTS

Preparation:

1) Receive dot or cross-hatch pattern from the color-bar/pattern generator.
2) Set BRIGHT and PICTURE controls for best picture.
3) Finish rough adjustments of landing, white balance and focus.

1. Static Convergence

- Horizontal Static Convergence
  1) Adjust H. STAT control so that red dot coincide with green dot at the center of screen.
  2) When blue dots are shifted in the same direction through out the whole screen, perform HMC compensation.
  3) Move the BMC magnet (a) to correct insufficient H. static convergence. (HMC compensation)

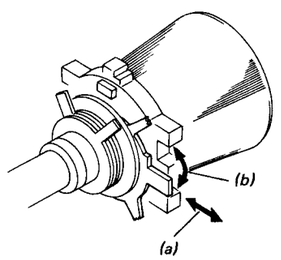


Fig. 3-6.

- Vertical Static Convergence
  1) Adjust V. STAT control so that red dot coincide with green dot at the center of screen.
  2) When blue dots are shifted in the same direction through out the whole screen, perform VMC compensation.
  3) Rotate BMC magnet (b) to correct insufficient V. static convergence. (VMC compensation)

Note:

1) HMC and VMC compensations influence each other, so repeat these compensations.
2) When compensations become impossible because of reverse movements of HMC and VMC, perform compensations by reversing the BMC magnet.

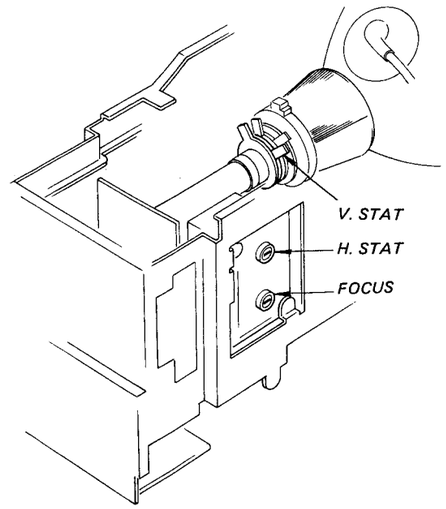


Fig. 3-7.

2. Dynamic Convergence

- When the mislanding is observed at screen as shown in Fig. 3-8, move the deflection yoke up or down.
  After adjustment, fix the deflection yoke by spacers.

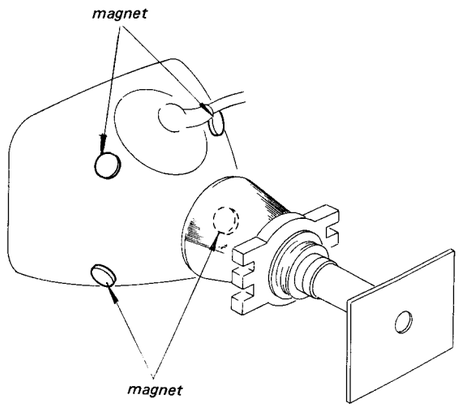


Fig. 3-5.

3-2. CONVERGENCE ADJUSTMENTS

Preparation:

1) Receive dot or cross-hatch pattern from the color-bar/pattern generator.
2) Set BRIGHT and PICTURE controls for best picture.
3) Finish rough adjustments of landing, white balance and focus.

1. Static Convergence

- Horizontal Static Convergence
  1) Adjust H. STAT control so that red dot coincide with green dot at the center of screen.
  2) When blue dots are shifted in the same direction through out the whole screen, perform HMC compensation.
  3) Move the BMC magnet (a) to correct insufficient H. static convergence. (HMC compensation)

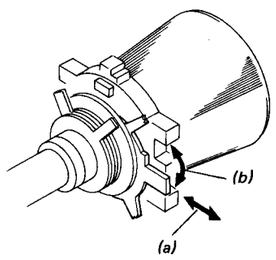


Fig. 3-6.

- Vertical Static Convergence
  1) Adjust V. STAT control so that red dot coincide with green dot at the center of screen.
  2) When blue dots are shifted in the same direction through out the whole screen, perform VMC compensation.
  3) Rotate BMC magnet (b) to correct insufficient V. static convergence. (VMC compensation)

Note:

1) HMC and VMC compensations influence each other, so repeat these compensations.
2) When compensations become impossible because of reverse movements of HMC and VMC, perform compensations by reversing the BMC magnet.

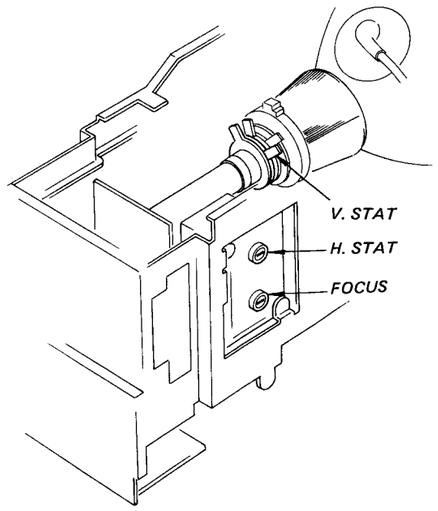


Fig. 3-7.

2. Dynamic Convergence

- When the mislanding is observed at screen as shown in Fig. 3-8, move the deflection yoke up or down.
  After adjustment, fix the deflection yoke by spacers.

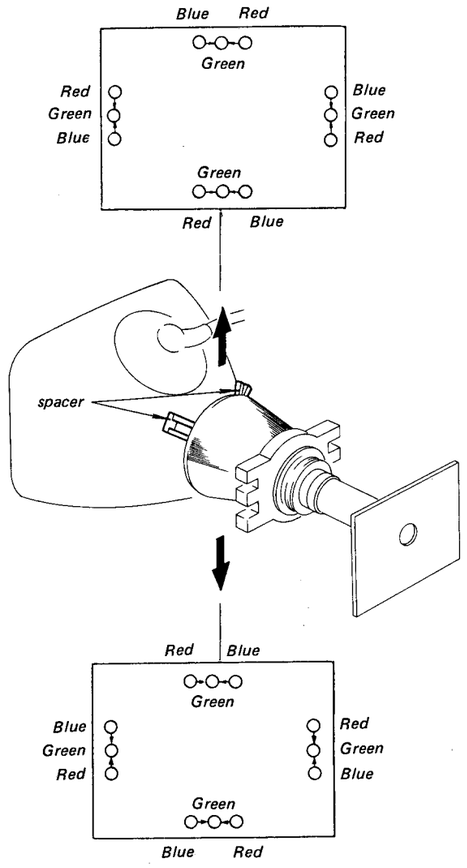


Fig. 3-8.

- In case of misconvergence at corners, affix a permalloy assembly corresponding to the misconverged areas.

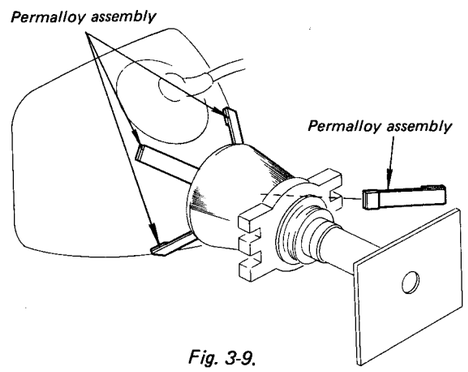


Fig. 3-9.

3-3. FOCUS ADJUSTMENT

1) Receive an off-air signal.
2) Set the PICTURE and BRIGHT controls for best picture.
3) Adjust V. HOLD control to synchronize picture.
4) Adjust FOCUS control for best focus. (Fig. 3-7.)

3-4. WHITE BALANCE ADJUSTMENT

Preparation:

1) Turn the AUTO/AFT switch to OFF position.
2) Feed in a cross-hatch pattern and turn the COLOR control fully counterclockwise to obtain the mono-chrome screen.

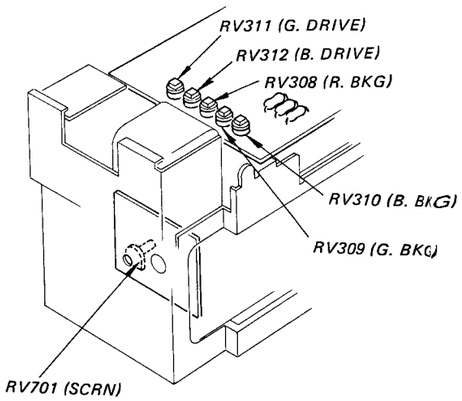
1. White Balance Near Cut-off

1) Turn BRIGHT and PICTURE controls fully counterclockwise.
2) Turn RV311 (G. DRIVE) and RV312 (B. DRIVE) fully clockwise.
3) Set RV308 (R. BKG), RV309 (G. BKG) and RV310 (B. BKG) to mechanical center.
4) Turn RV701 (screen) slowly to obtain a faintly visible cross-hatch. Note the color which first becomes visible by turning RV701. Do not turn a BKG control for this color.
5) Adjust the other two BKG controls for best white balance (neutral gray) of faint cross-hatch.

2. White Balance at White Peak

1) Turn BRIGHT and PICTURE controls fully clockwise.
2) Observe the screen and adjust the DRIVE control for best white balance.

Note: When white balance can not be obtained near cut-off or at the white peak, repeat abave steps several times.



SECTION 4
CIRCUIT ADJUSTMENS

Note: (1) TEST EQUIPMENT REQUIRED

1. Oscilloscope
2. Voltmeter (VOM)
3. Color-bar/pattern generator
4. Variable auto-transformer
5. Frequency counter
6. Digital multimeter
7. Regulated-dc power supply
8. DC ammeter

(2) INPUT SIGNAL

When making these adjustments, supply a cross-hatch, color-bar or an off-air signal.

(3) CONTROL SETTINGS

Controls and switch should be set as follows when making checks and adjustments unless otherwise noted.

PICTURE control
HUE control
COLOR control
BRIGHT control
V. HOLD control
} Set for bast picture

AUTO/AFT switch . . . ON

(4) These adjustments should be performed with the rated power supply voltage unless otherwise noted.

(5) ADJUSTMENT

Adjustment	Circuit Board	Page
AFT RF AGC U-V SIF COLOR SYNC COLOR LEVEL SUB BRT SUB CONTRAST	A	18 – 20
SCREEN DISPLAY ADJUSTMENT CLOCK ADJUSTMENT	MB	21 – 23
CHARGE STOP R556 ADJUSTMENT BATTERY STOP ADJUSTMENT H. CENT V. CENT H. FREQ V. SIZE V. LIN R567 ADJUSTMENT	D, X1	24 – 26

4-1. A BOARD ADJUSTMENTS

RF AGC U-V

1. *Tune in an off-air signal.*
2. *Adjust RV201 so that snow noise and cross-modulation disappear from the picture.*

AFT

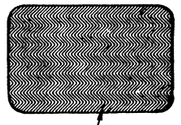
1. *Tune in an off-air signal.*
2. *Set the AUTO/AFT switch to OFF.*
3. *Set the CHANNEL SET switch (S2201) to off, obtain 920kHz beat to press the TUNING UP (▶) switch (S2203).*
4. *Press the TUNING DOWN (◀) switch (S2204) to the point where the 920kHz beat just disappears.*
5. *Set the AUTO/AFT switch to ON. (The 920kHz beat will appear again.)*
6. *Set T205 to the point where the 920kHz beat just disappears.*

CHECK

1. *Set the AUTO/AFT switch to OFF.*
2. *Shift the tuning by pressing the TUNING UP (▶) or TUNING DOWN (◀) button and confirm that the suitable picture is obtained when AUTO/AFT switch is set ON.*

AFTER ADJUSTMENT

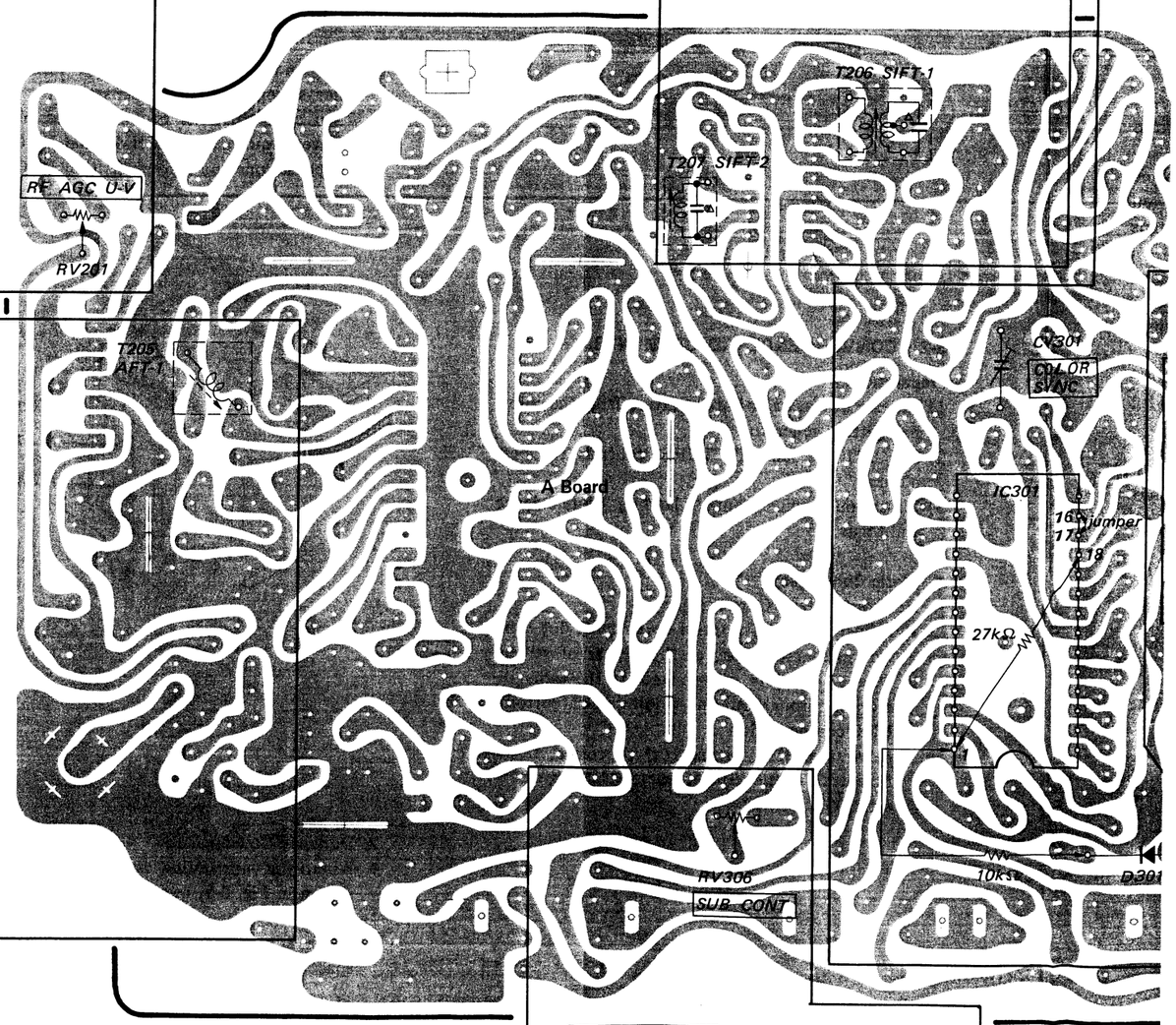
1. *Set the AFT/AUTO switch ON.*
2. *Press the TUNING UP (▶) or TUNING DOWN (◀) button.*



920kHz beat

SIF

1. *Tune in an off-air signal.*
2. *Adjust T206 and T207 for maximum clear-sound.*



SUB CONTRAST

1. *Tune in an off-air signal.*
2. *Set the PICTURE and BRIGHT controls to the suitable picture.*
3. *Set AUTO/AFT switch to OFF and turn the COLOR control to counterclockwise to obtain the monochrome picture.*
4. *Adjust RV306 for the suitable contrast picture.*
5. *Confirm that contrast does not change excessively on other channels.*

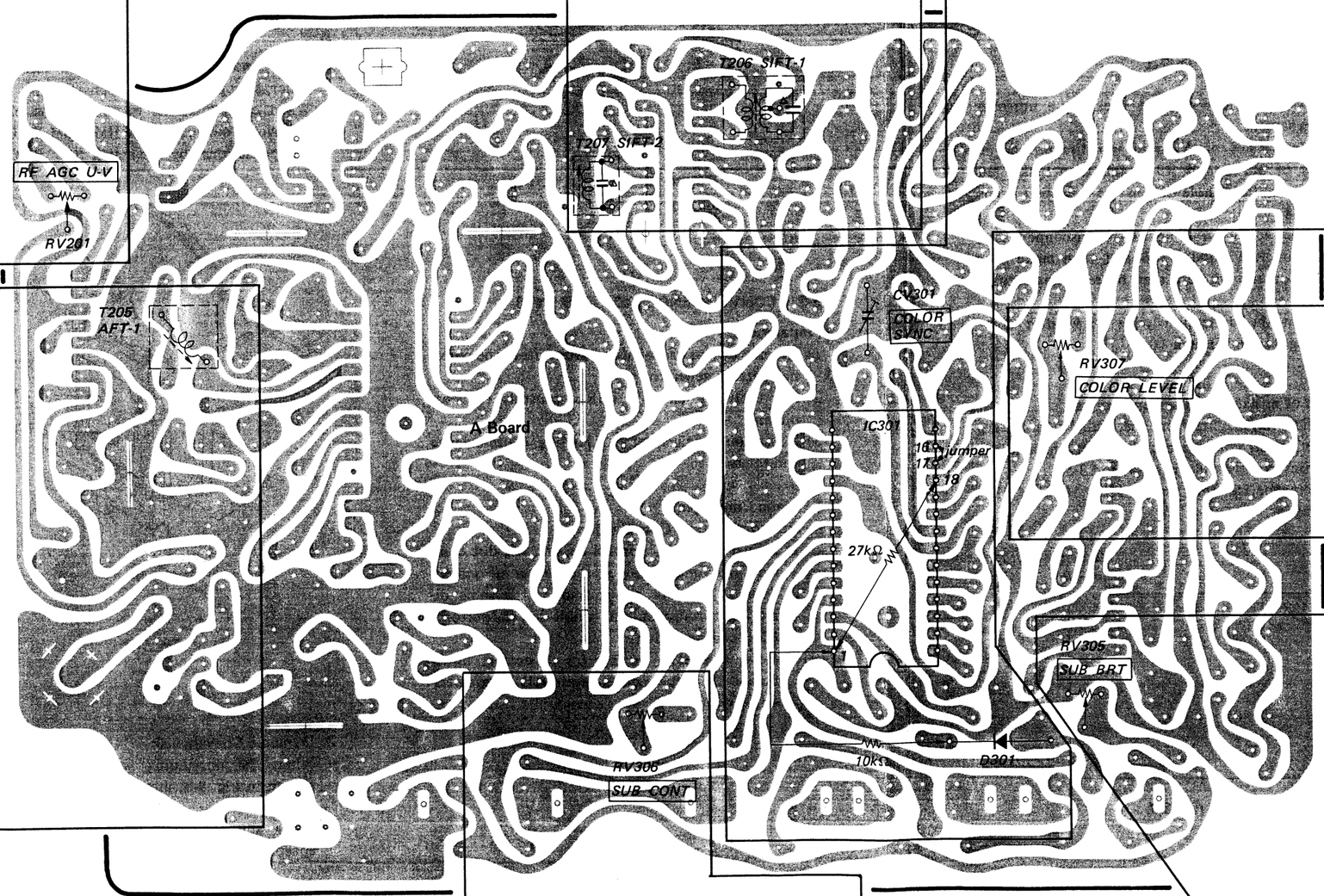
...w noise and cross-
...m the picture.

SIF

1. Tune in an off-air signal.
2. Adjust T206 and T207 for maximum clear-sound.

COLOR SYNC

1. Feed in a color-bar signal from the color-bar/pattern generator.
2. Set the switch and controls as shown below.
   AUTO/AFT switch ..... ON
   COLOR control, HUE control ..... mechanical center
   PICTURE control ..... fully clockwise
3. Connect a 27kΩ resistor between the pin 18 and 1 of IC301.
4. Connect a 10kΩ resistor between the cathode of D301 and the pin 1 of IC301.
5. Short circuit between the pin 16 and 17 of IC301 with a jumper.
6. Adjust CV301 to obtain the stable color picture.
7. Disconnect the 27kΩ and 10kΩ resistors and the jumper.

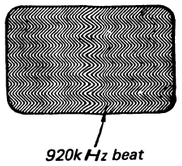


COLOR LEVEL

1. Tune in a strong off-air signal.
2. Set the COLOR and HUE controls to the mechanical center.
3. Set the PICTURE and BRIGHT controls for the suitable picture.
4. Adjust RV307 for a proper color intensity.
5. Confirm the color intensity does not change to excessive color intensity on other channels.

SUB BRT

1. Tune in an off-air signal.
2. Tune the PICTURE control to fully counter-clockwise, and set the BRIGHTNESS control for the suitable picture.
3. Set the AFT/AUTO switch to OFF and the COLOR control to fully counterclockwise, so that the monochrome picture will appear.
4. Set RV305 for a proper brightness of the picture.
5. Set the PICTURE control for the suitable picture.
6. Confirm that the brightness does not change excessively on other channels.



SUB CONTRAST

1. Tune in an off-air signal.
2. Set the PICTURE and BRIGHT controls to the suitable picture.
3. Set AUTO/AFT switch to OFF and turn the COLOR control to counterclockwise to obtain the monochrome picture.
4. Adjust RV306 for the suitable contrast picture.
5. Confirm that contrast does not change excessively on other channels.

4-2. MB BOARD ADJUSTMENTS

SCREEN DISPLAY ADJUSTMENT

VERT. (U), VERT. (D)

1. Set the CHANNEL SET switch to ON.
2. Adjust the display position. (Fig. 4-1)
   VERT (U): Adjust RV111 so that L1 becomes about 12mm.
   VERT (D): Adjust RV110 so that L2 becomes about 16mm.

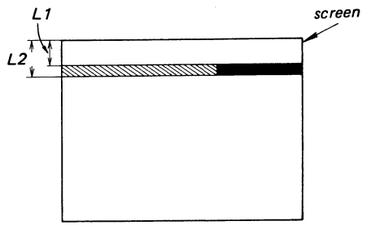


Fig. 4-1.

HOR (P)

1. Set the CHANNEL SET switch to ON.
2. Press the CLEAR switch.
3. Adjust RV113 so that the L3 becomes about 6mm (red) at VHF low band. (Fig. 4-2.)

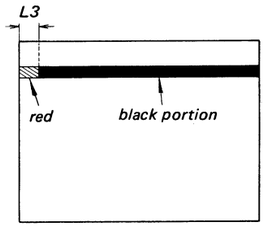


Fig. 4-2.

HOR (W), BAR

1. Set the CHANNEL SET switch to ON.
2. Press the TUNING UP (▶) button to set the highest UHF channel. (the position to stop searching)
3. HOR (W): Adjust RV114 so that the width (L4) of the black portion becomes about 6mm from the right side of the screen. (Fig. 4-3.)
4. BAR: Adjust RV112 so that number of bars are eight and the length of right green band from the 8th bar becomes 1 through 4.

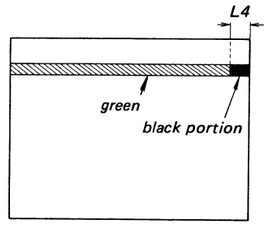


Fig. 4-3.

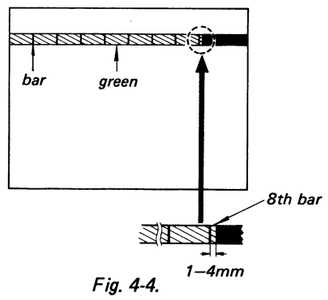
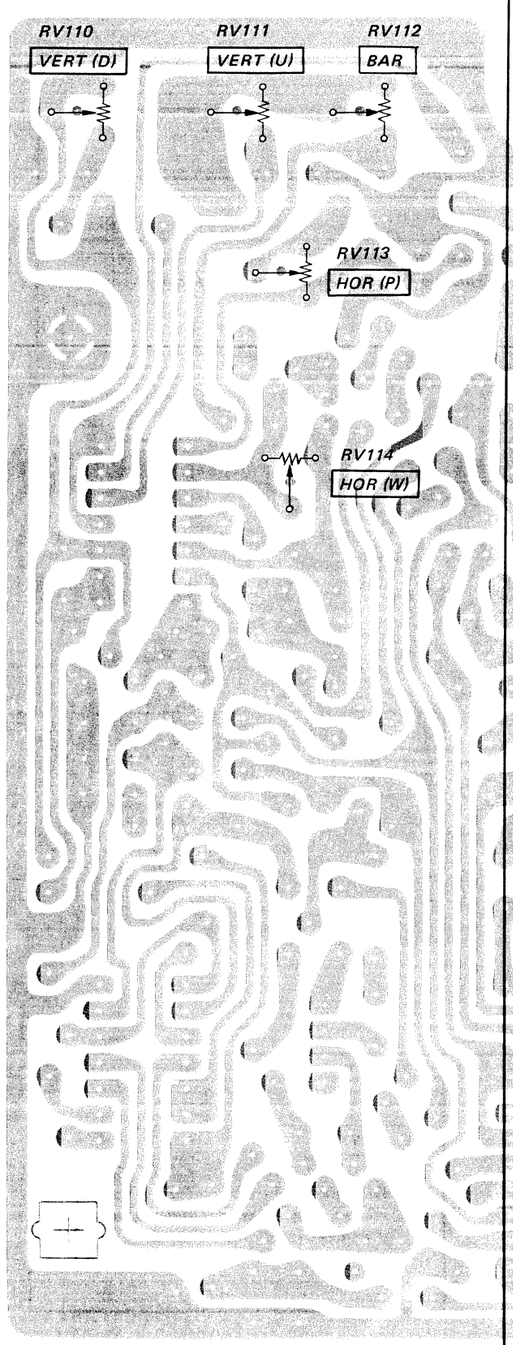
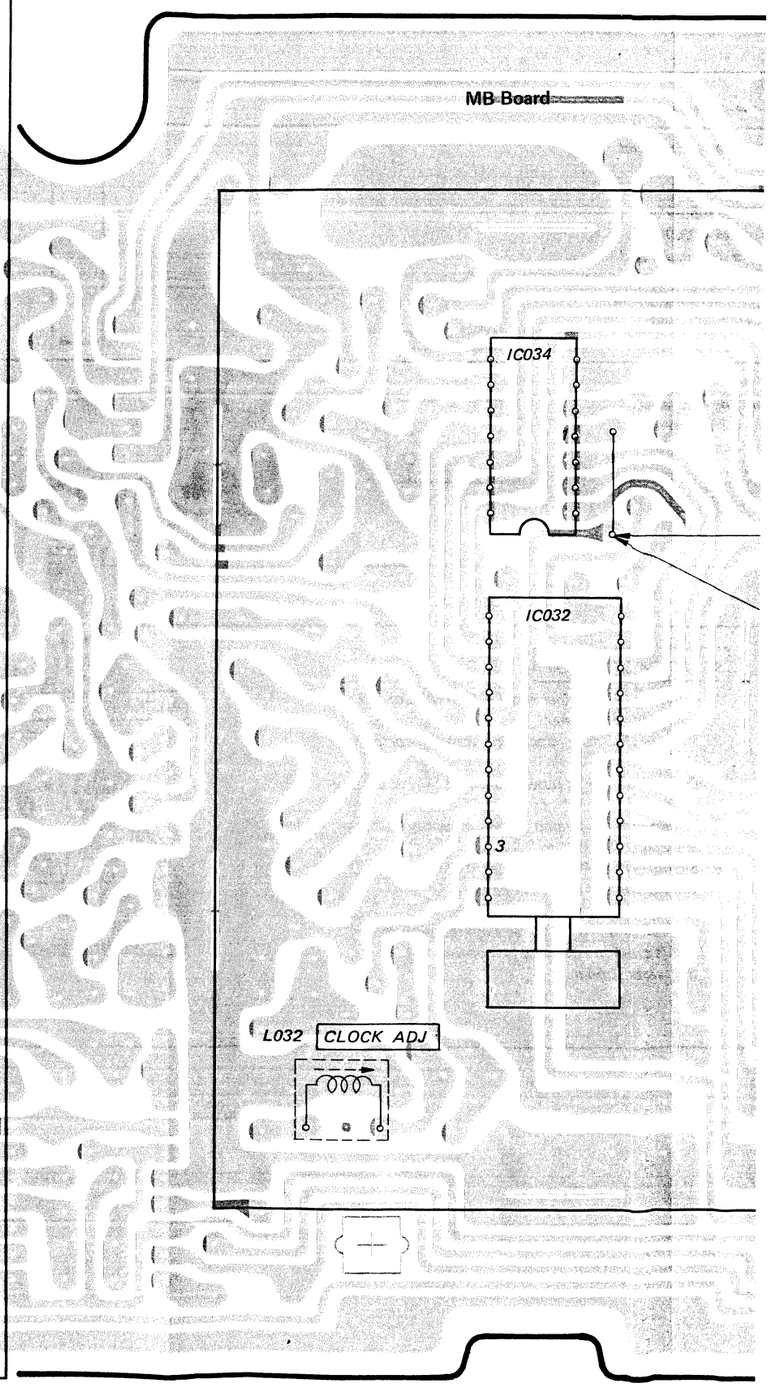
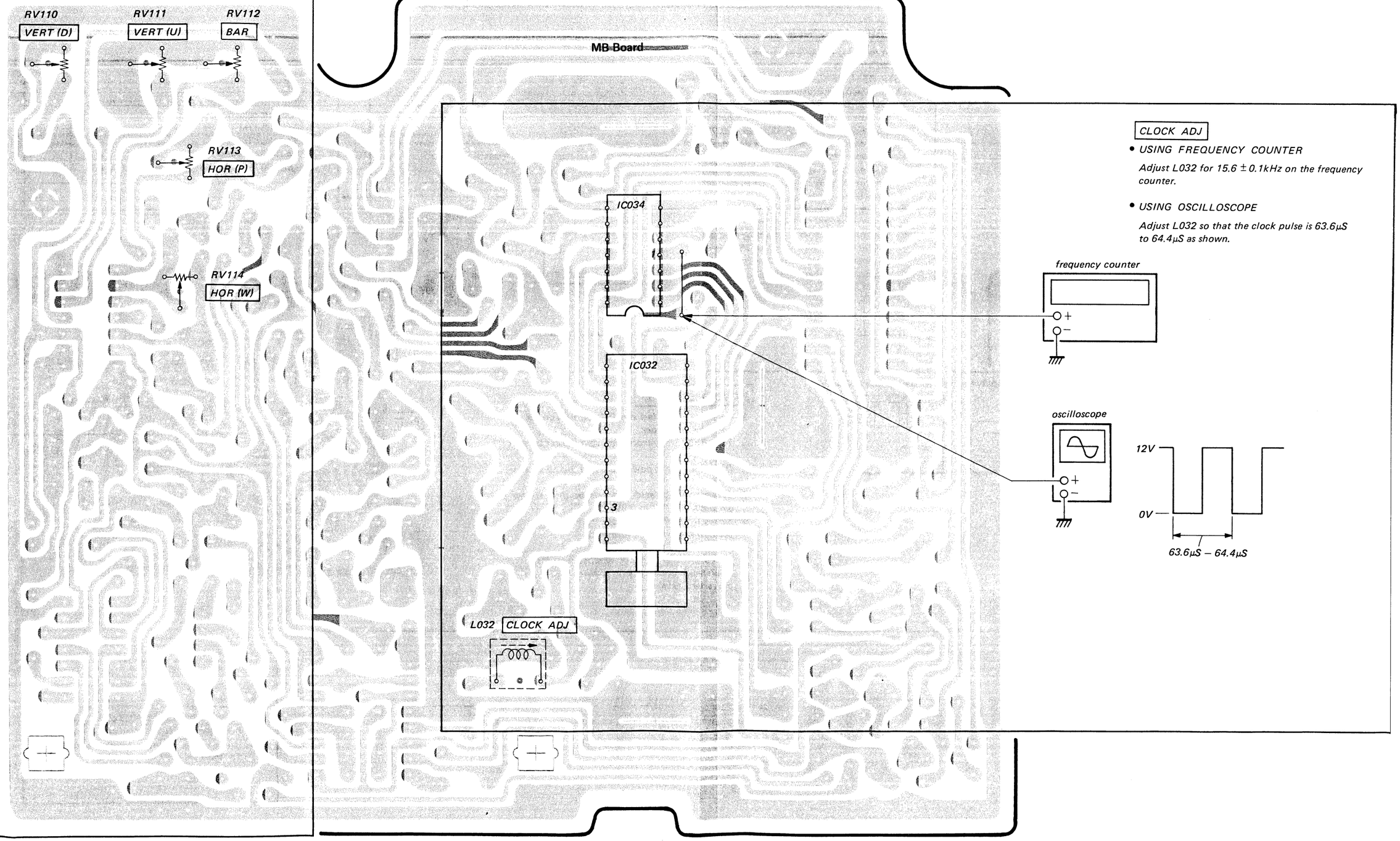


Fig. 4-4.





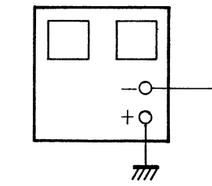

RV110
VERT (D)
RV111
VERT (U)
RV112
BAR
RV113
HOR (P)
RV114
HOR (W)
MB Board
IC034
IC032
3
L032 CLOCK ADJ
CLOCK ADJ
• USING FREQUENCY COUNTER
Adjust L032 for 15.6 ± 0.1kHz on the frequency counter.
• USING OSCILLOSCOPE
Adjust L032 so that the clock pulse is 63.6μS to 64.4μS as shown.
frequency counter
+
−
oscilloscope
+
−
12V
0V
63.6μS – 64.4μS

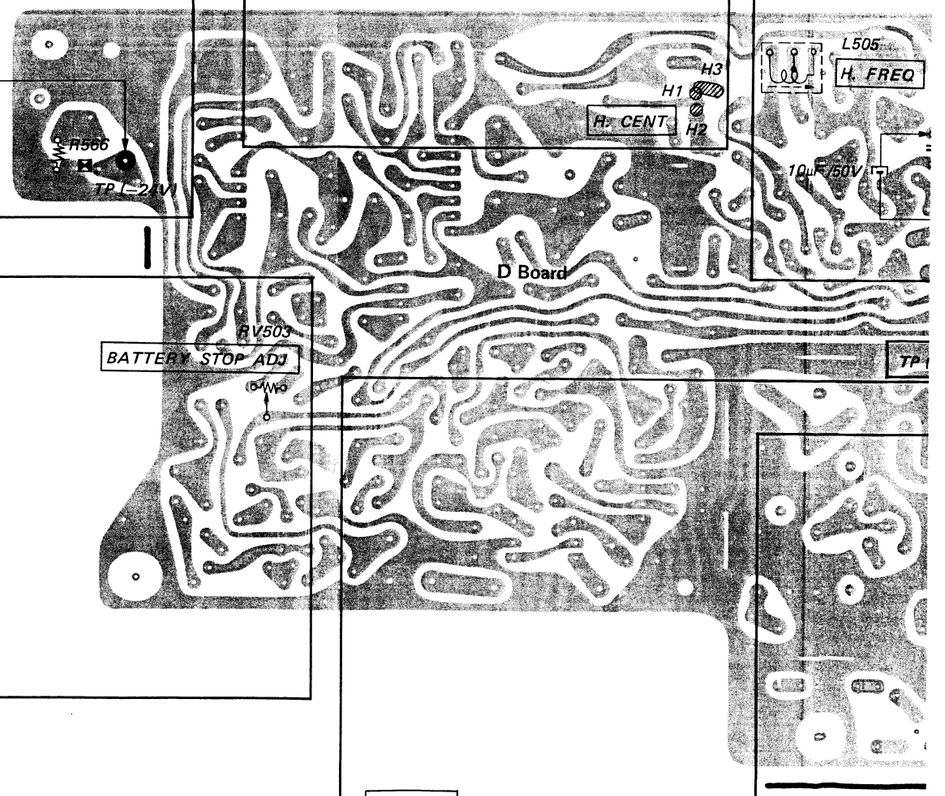
4-3. D AND X1 BOARDS ADJUSTMENT:

R566 ADJUSTMENT

When replacing the following components, make this adjustments.
D510, D511, D512, R553, R565, R566 (marked ◪ on the schematic diagram).

1. *Set the POWER switch to ON.*
2. *Connect the regulated-dc power supply, as shown and supply −27.8V dc to −28.0V dc.*
3. *Then confirm that the picture disappears and no sound is heard.*
4. *Disconnect the regulated-dc power supply and turn the POWER switch to OFF, then set the POWER switch to ON.*
5. *Connect the regulated-dc power supply as shown and supply −26.0V dc.*
6. *Confirm that the set is operating normally.*
7. *If steps 1 through6 are not satisfied, select a proper resistance value (¼W carbon) for R566 and repeat abave steps.*





H. CENT

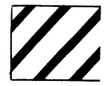
Picture position is selected from four steps below.

1. *Without soldering.*
2. *To solder H1.*
3. *To solder H2.*
4. *To solder H1 and H2.*

The picture move to right in order steps 1 to 4.

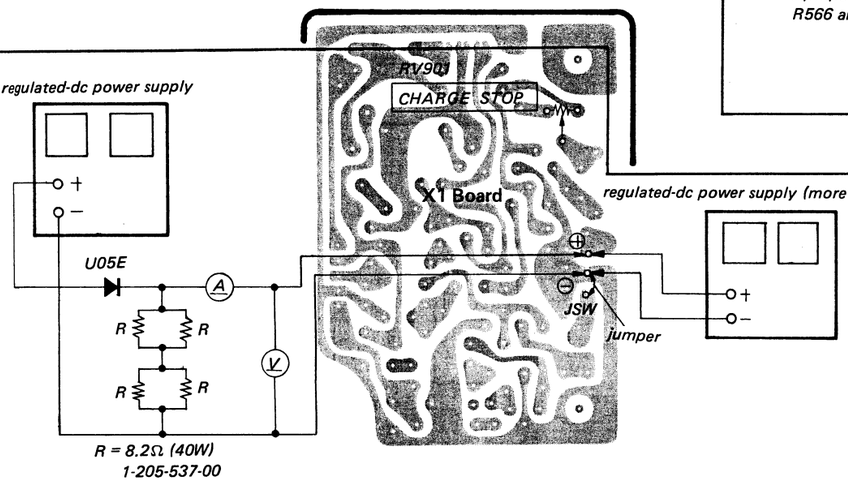
H. FREQ

1. *Tune in*
2. *Adjust th controls*
3. *Connect between the grou*
4. *Adjust L*



fo : too low

5. *Confirm on other*



CHARGE STOP

1. *Connect voltmeter, ammeter, diode, resistance and regulated-dc power supply to the ⊕ and ⊖ terminals on X1 board as shown in the figure.*
2. *Turn RV901 fully counterclockwise to locked position from the component side.*
3. *Supply 120 AC to AC IN connector.*
4. *Set the CHARGE switch to the CHARGE position.*
5. *Supply the dc voltage from the regulated-dc power supply and adjust the regulated-dc power supply for 16.0V on the voltmeter.*
6. *Slowly rotate RV901 and stop it in a position where the indicated value of the ammeter drops from 540 ± 200mA to 100 ± 5mA.*

BATTERY STOP ADJ

1. *Connect ⊖ terminal and JSW terminal on X1 board by the jumper.*
2. *Turn RV503 fully clockwise from the component side.*
3. *Disconnect the ac power cord and the car battery cord.*
4. *Connect the regulated-dc power supply as shown and apply 9.7V dc to 9.9V dc.*
5. *Slowly rotate RV503 and set RV503 to the position where raster disappears.*

Confirmation

- *With 9.9V dc to 10.1V dc supplied with the regulated-dc power supply, confirm that the raster appears.*

V. CENT

1. *When the picture is shifted abave, solder V1.*
2. *When the picture is shifted below, solder V2.*
3. *When V1 and V2 are not soldered, picture positions between steps 1 and 2.*

nents, make

566 (marked

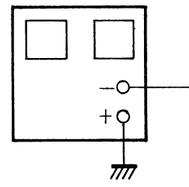
upply, as
–28.0V dc.
appears and

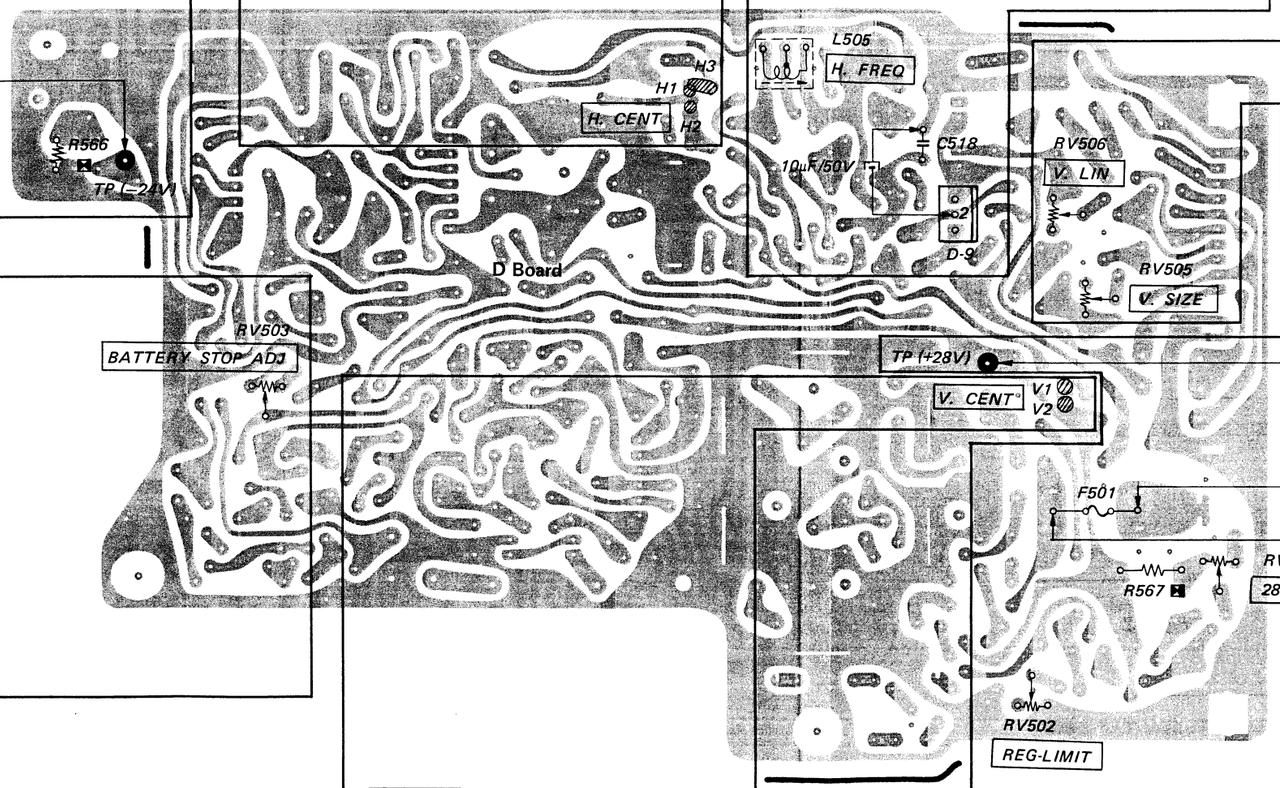
er supply and
then set

upply as

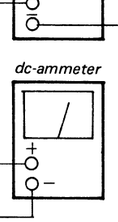
normally.
ed, select
bon) for

regulated-dc power supply





digital multimeter



dc-ammeter

ATTERY STOP ADJ

Connect ⊖ terminal and JSW terminal on X1 board by the jumper.
Turn RV503 fully clockwise from the component side.
Disconnect the ac power cord and the car battery cord.
Connect the regulated-dc power supply as shown and apply 9.7V dc to 9.9V dc.
Slowly rotate RV503 and set RV503 to the position where raster disappears.

onfirmation

With 9.9V dc to 10.1V dc supplied with the regulated-dc power supply, confirm that the raster appears.

H. CENT

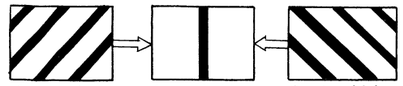
Picture position is selected from four steps below.

1. Without soldering.
2. To solder H1.
3. To solder H2.
4. To solder H1 and H2.

The picture move to right in order steps 1 to 4.

H. FREQ

1. Tune in a strong off-air signal.
2. Adjust the PICTURE, BRIGHT and V. HOLD controls for the suitable and stable picture.
3. Connect a 10µF/50V electrolytic capacitor between the pin 2 of D9 connector and the ground.
4. Adjust L505 for the stable picture as shown.



fo : too low — fo : suitable (fo ≒ 15,734Hz) — fo : too high

5. Confirm that the stable picture is obtained on other channels.

V. SIZE, V. LIN

1. Tune in an off-air signal.
2. Make proper vertical synchronization.
3. Adjust the PICTURE and BRIGHT controls for the best picture.
4. Adjust RV505 and RV506 for best vertical linearity and size on the screen.

V. CENT

1. When the picture is shifted abave, solder V1.
2. When the picture is shifted below, solder V2.
3. When V1 and V2 are not soldered, picture positions between steps 1 and 2.

■ R567 ADJUSTMENT

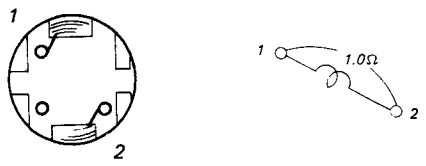
When replacing the following components or rotating RV501 and RV502, make this adjustments.
D501, R501, R502, R508, R509, R567, RV501, RV502 (marked ■ on the schematic diagram)

1. Disconnect F501 and connect an ammeter as shown.
2. Set RV502 to mechanical center.
3. Supply 26.4V dc to EXT. DC IN connector with a regulated-dc power supply.
4. Adjust RV501 +28V dc on digited multimeter.
5. Set the regulated-dc power supply to 12V dc and slowly reduce this voltage until the current on the dc-ammeter becomes maximum.
6. Confirm that the voltage on the regulated-dc power supply is less than 10V.
7. Adjust RV502 for 1.25A on ammeter.
8. Fully turn RV501 for a maximum value on the digital multimeter.
9. Confirm that the indicated value of the digital multimeter is within +28V to +30V with 26.4V dc supplied to the EXT. DC IN connector.
10. When the range of +28V to +30V can not be obtained at step 8, select a proper resistance value for R567.
11. Adjust RV501 to perform steps 3 and 4.

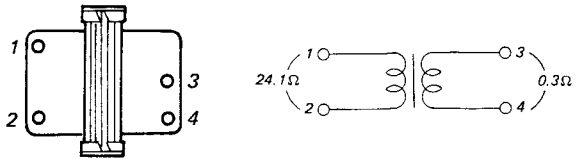
SECTION 5
DIAGRAMS

5-1. DC RESISTANCE AND WINDING DIAGRAMS OF COILS AND TRANSFORMERS

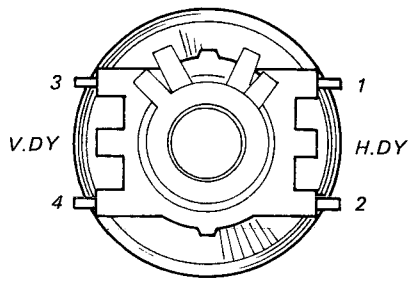
L804

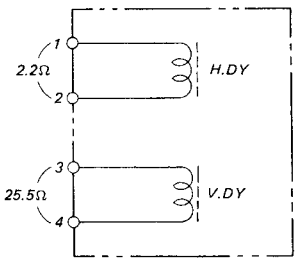


T502 HDT

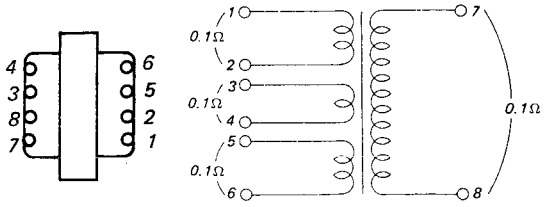


L903 L904 DY

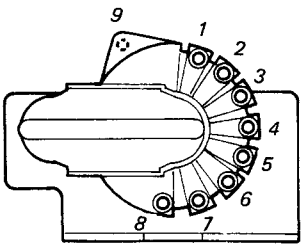




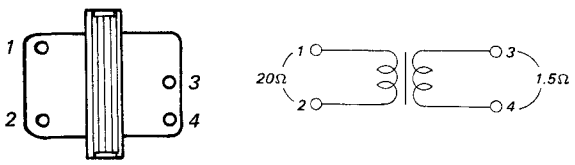
T701 HT

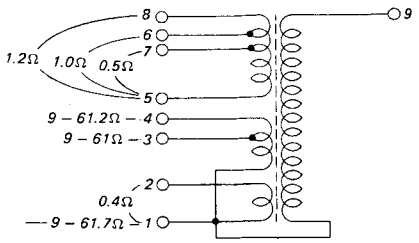


T801 FBT



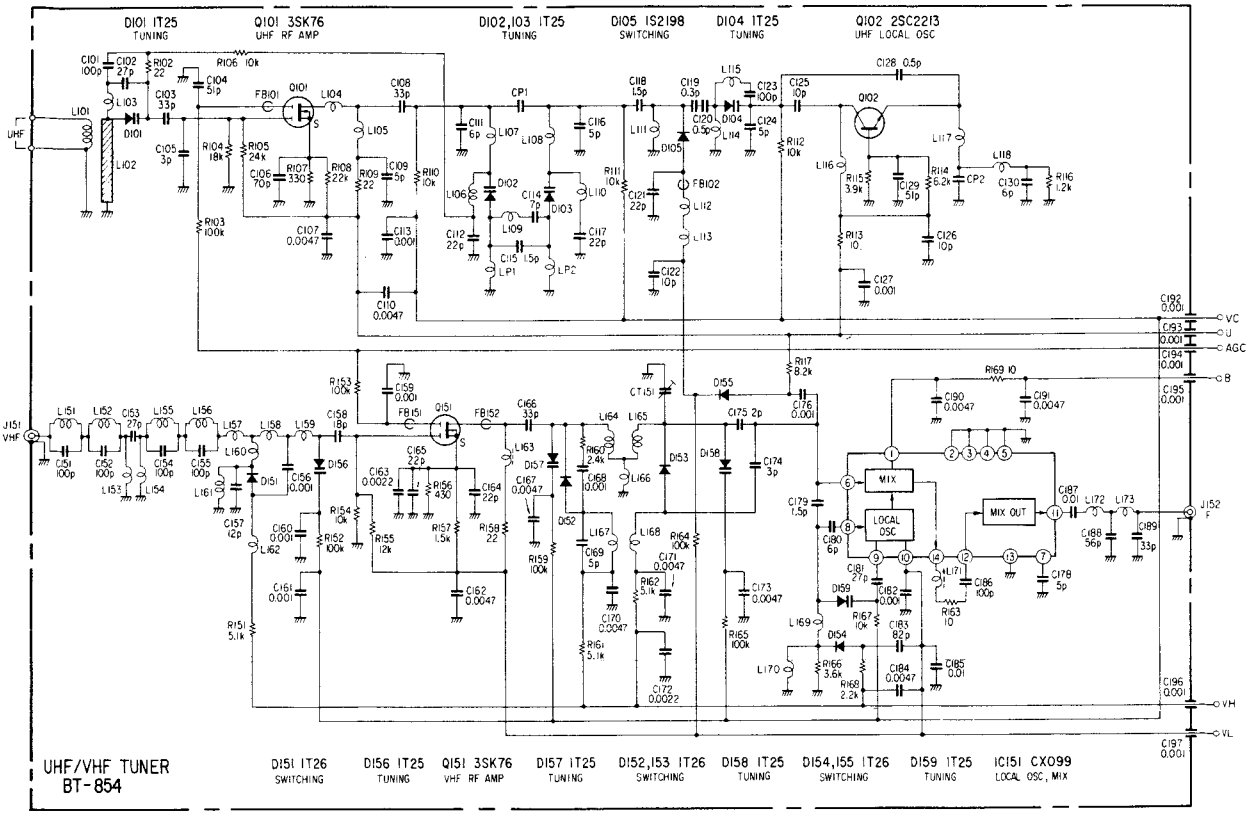
T501 CDT





- DC resistance measurements shown with coils and transformers disconnected from circuit.

5-2. UHF/VHF TUNER SCHEMATIC DIAGRAM
– BT-854 –



- Tuner reference numbers are not included in the Electrical Parts List (Page 46 – 53).

5-3. MOUNTING DIAGRAMS

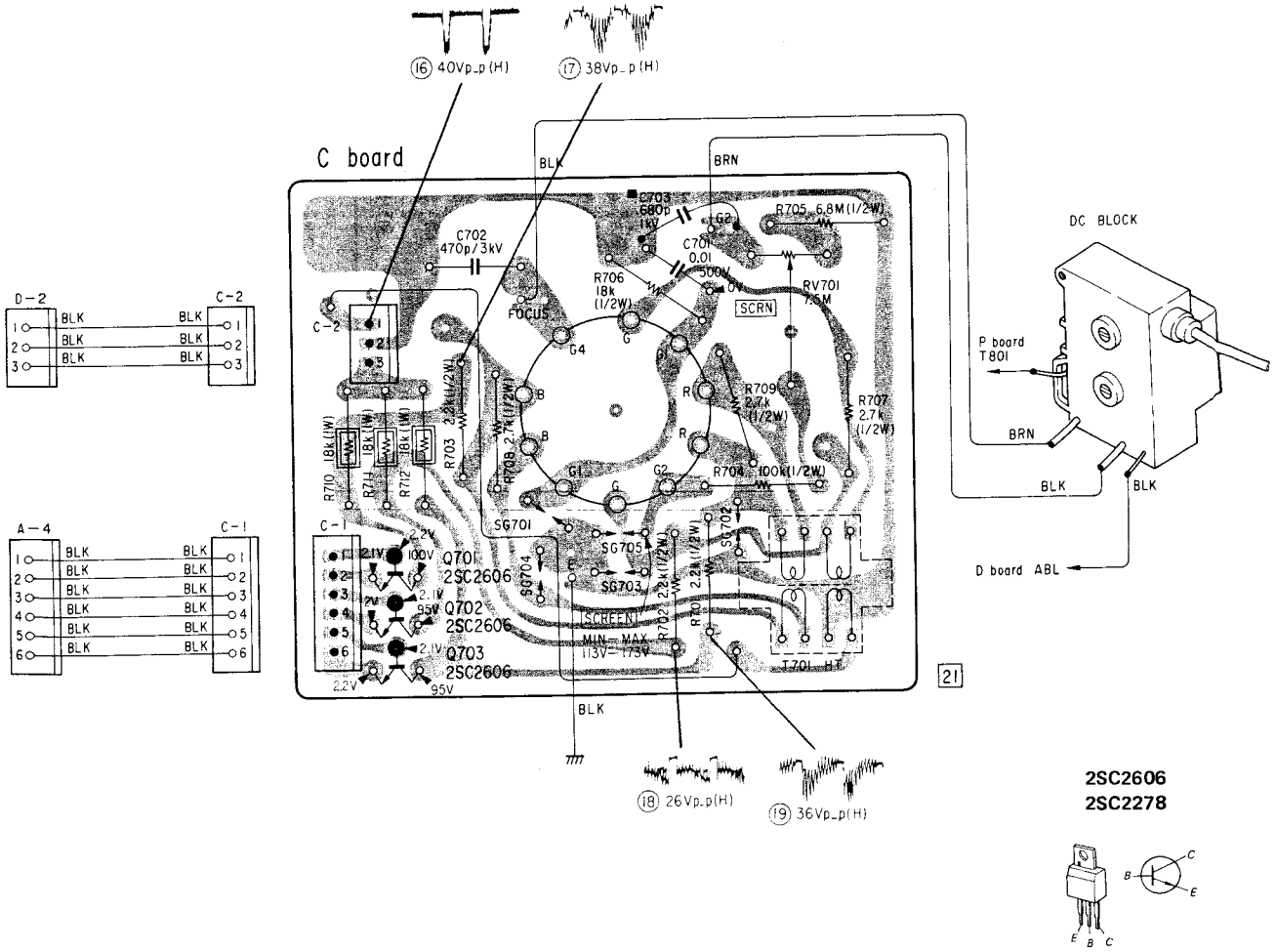
– Conductor Side –

A B C D

1 2 3 4

– C Board –

Note: ● ○— : parts extracted from the component side.
● ●— : parts extracted from the conductor side.



2SC2606
2SC2278

X1 [CHARGE] **X2** [CHARGE DISPLAY]

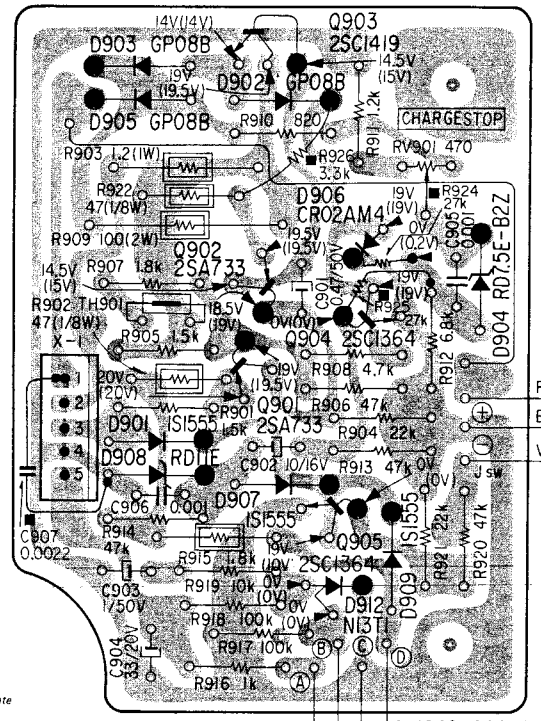
A B C D

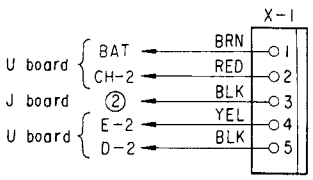
1 2 3 4 5

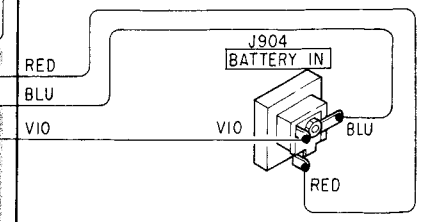
– X1 and X2 Boards –

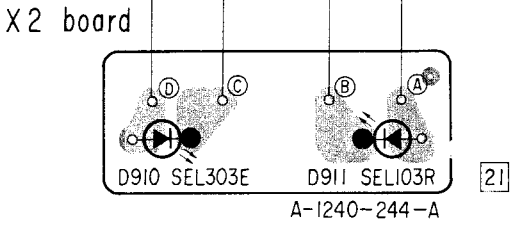
Note: ● ○— : parts extracted from the component side.
● ●— : parts extracted from the conductor side.

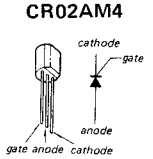
X1 board



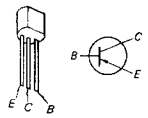






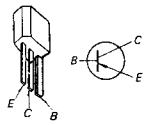


2SA733

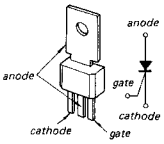


CR02AM4

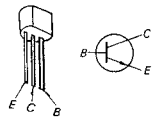
2SA1027R



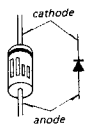
CV12E



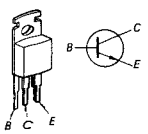
2SC1364



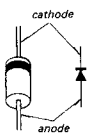
EQB01-08



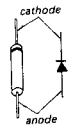
2SC1061
2SC1419



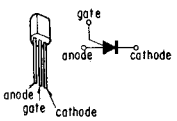
GP08B



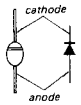
1S1555
RD7.5E-B2Z
RD11E



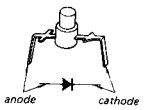
N13T1



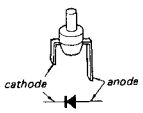
U05G



SEL103R



SEL303E

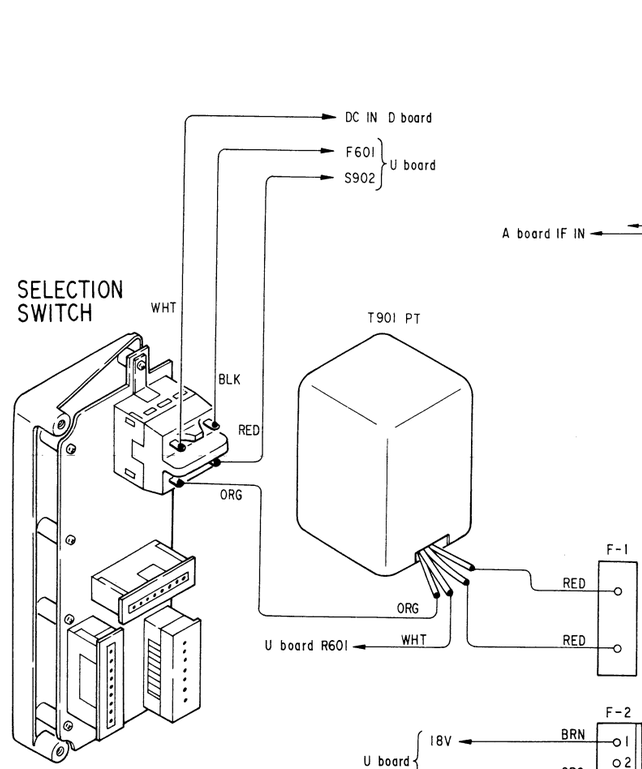


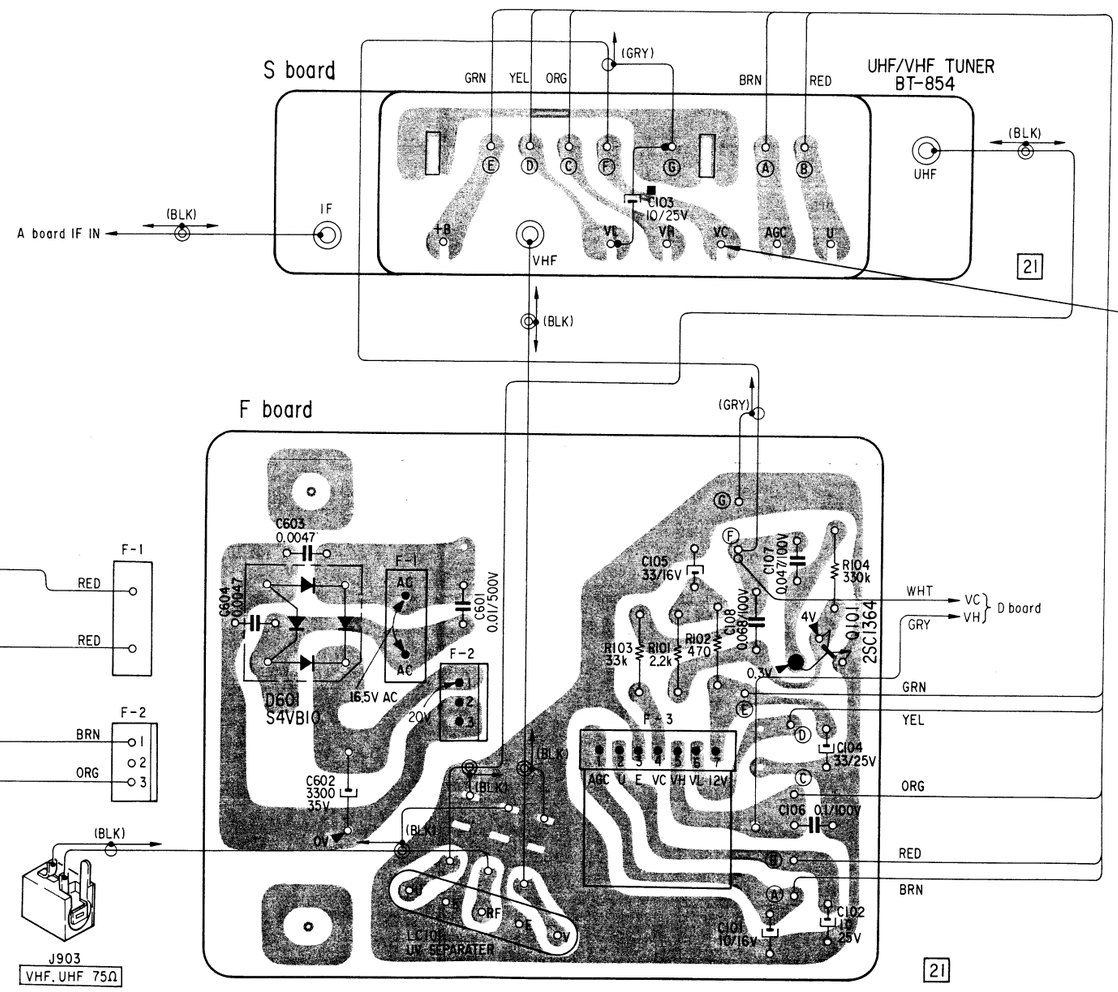
A B C D E F G H

1 2 3 4 5

— F and S Boards —

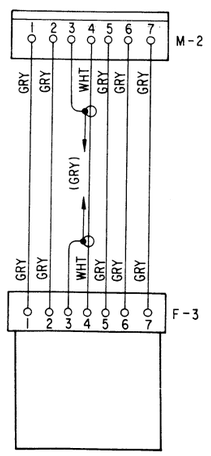
Note: ● ○— : parts extracted from the component side.
● ●— : parts extracted from the conductor side.



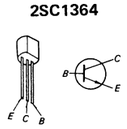


CHANNEL	VOLTAGE
VHF 2CH-6CH	3V 19V
VHF 7CH-13CH	7.5V 20V
UHF 14CH-83CH	1.3V 27V

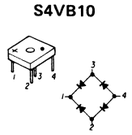
MEASURED USING VTVM



2SC1364



S4VB10

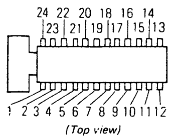


MB MB

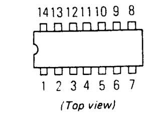
TUNING CONTROL
MEMORY NEON DRIVE
BAND SWITCH

– MB Board –

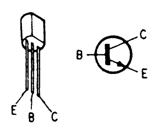
CX760
CX804



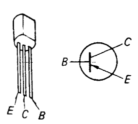
CX761
μPC339C
μPC4081C



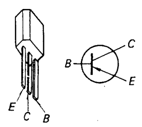
2N3904



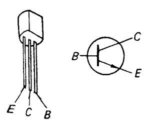
2SA733



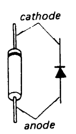
2SA1027R



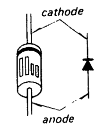
2SC1364



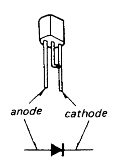
1S1555
10E2



EQA01-08S
EQA01-09R
EQB01-08
EQB01-09
RD9.1E
RD9.1E-B3Z
SIB01-02

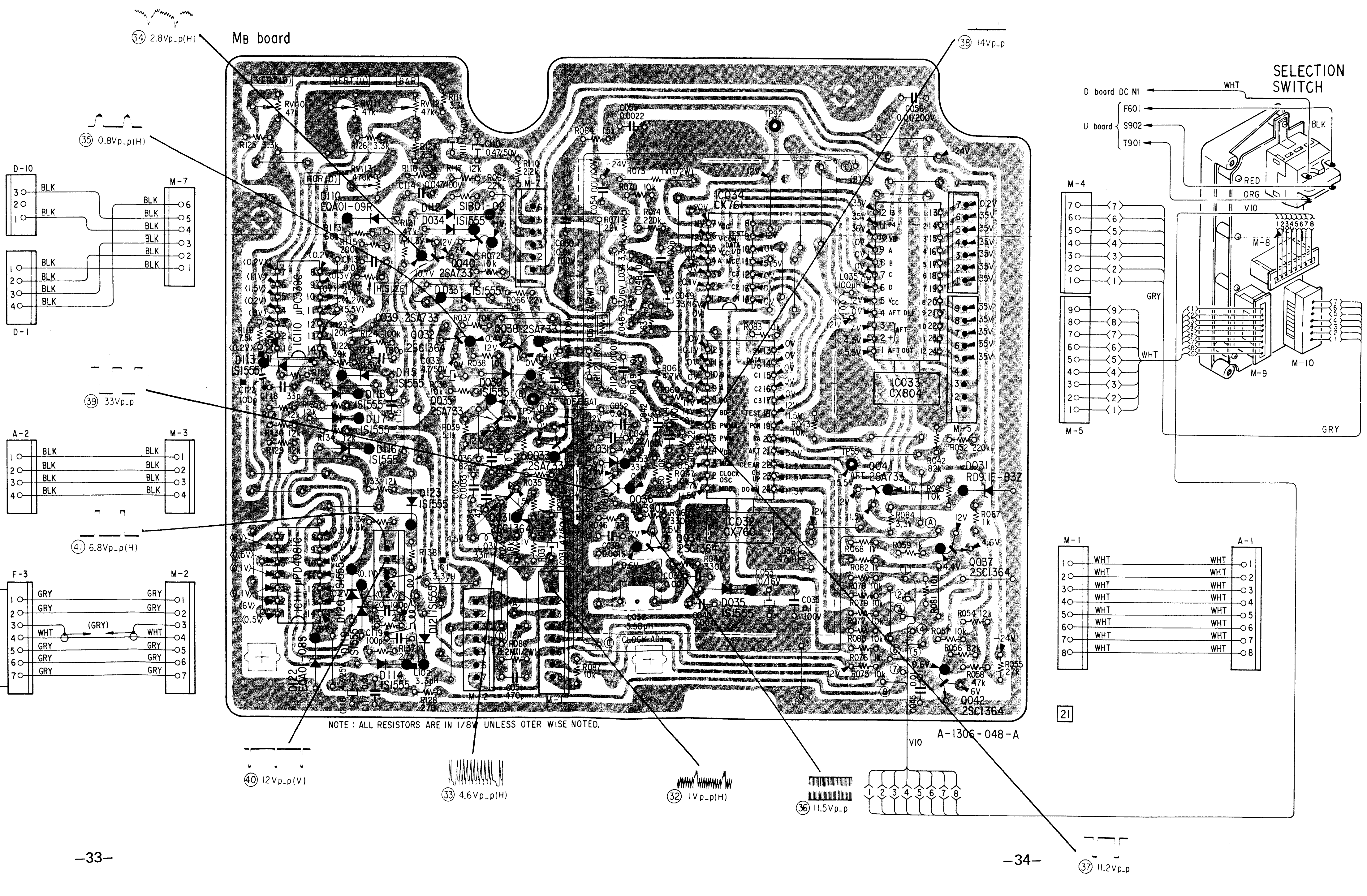


μPC574J



Q · IC	IC110 IC111 040 039 032 035 038 031 033 IC031 036 034 IC034 IC032 IC033 041 037 042	Q · IC
D	113 118 117 116 122 110 115 120 119 114 123 121 112 034 033 030 035 031	D
ADJ	RV110 RV111 RV113 RV114 RV112	ADJ

Note: ● ○— : parts extracted from the component side.
● ●— : parts extracted from the conductor side.


MB board
(34) 2.8Vp-p(H)
(35) 0.8Vp-p(H)
(38) 14Vp-p
(39) 33Vp-p
(41) 6.8Vp-p(H)
(40) 12Vp-p(V)
(33) 4.6Vp-p(H)
(32) 1Vp-p(H)
(36) 11.5Vp-p
(37) 11.2Vp-p
D-10
D-1
M-7
A-2
M-3
F-3
M-2
BLK
GRY
WHT
(GRY)
SELECTION SWITCH
D board DC N1
U board
F601
S902
T901
WHT
BLK
RED
ORG
V10
M-4
M-5
M-8
M-9
M-10
GRY
M-1
A-1
IC110 μPC339C
IC111 μPD4081C
IC034 CX761
IC033 CX804
IC032 CX760
IC031 μPC574J
D031 RD9.1E-B3Z
Q037 2SC1364
Q042 2SC1364
Q041 2SA733
NOTE : ALL RESISTORS ARE IN 1/8W UNLESS OTER WISE NOTED.
A-1306-048-A

21

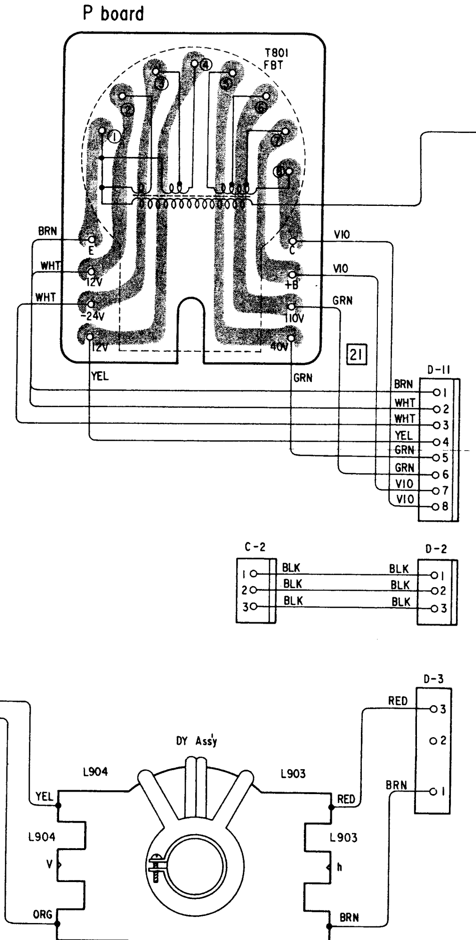
[AC IN, DC IN] **U** [CHARGE] **J** **P** [POWER SUPPLY AUDIO, H DEF V DEF, DC CONV] **D** **D P J U**

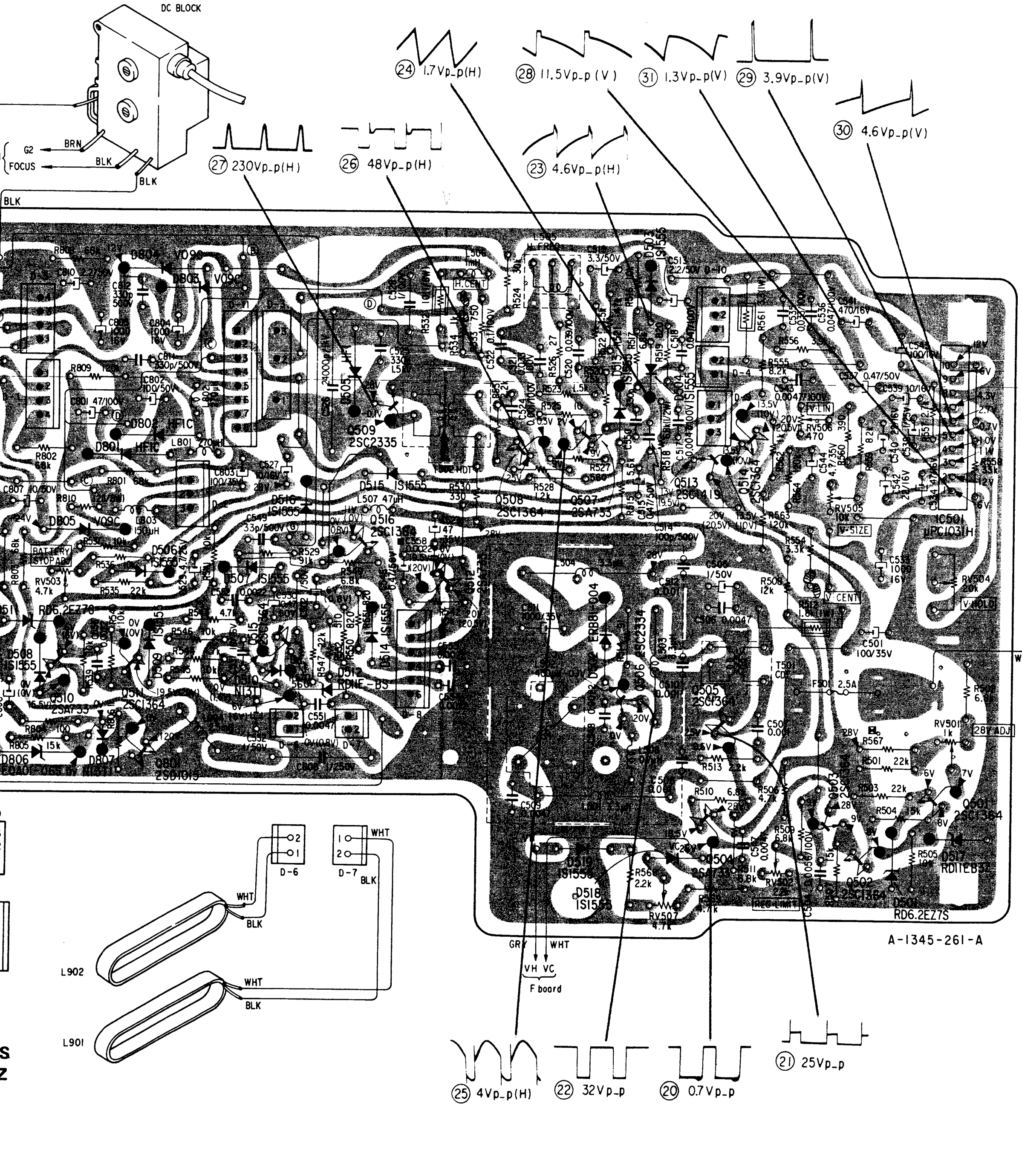
A	B	C	D	E	F	G	H

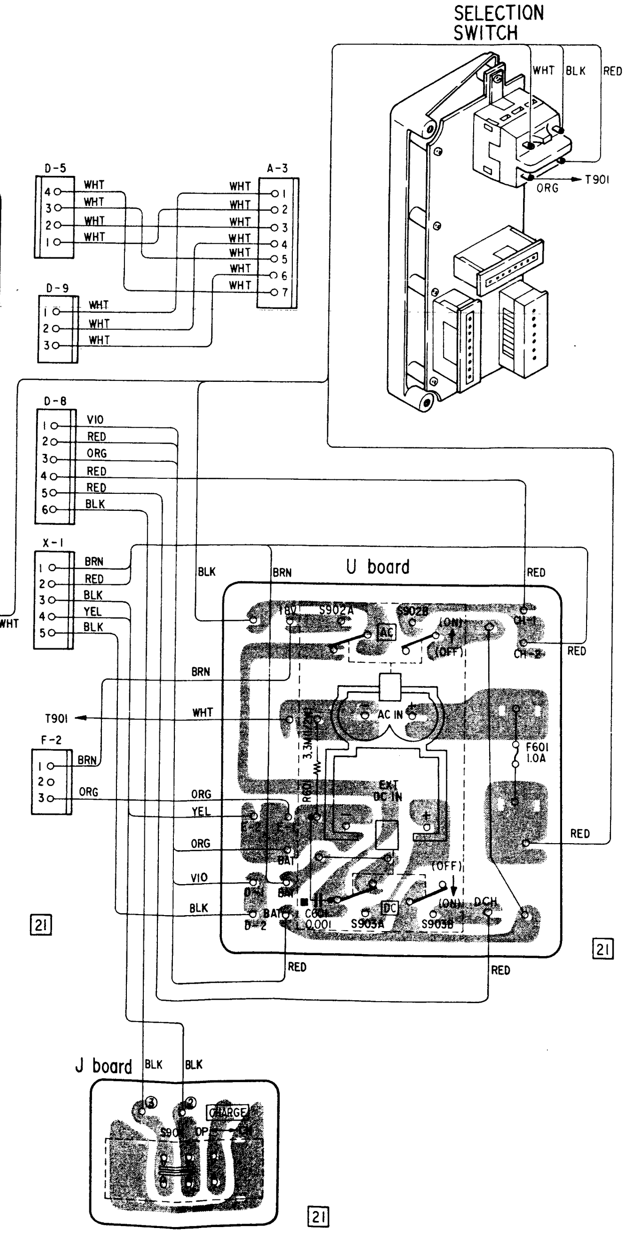
– D, P, J and U Boards –

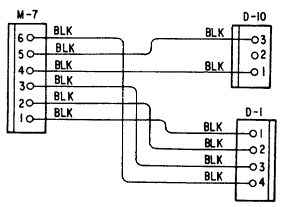
- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.

Q · IC	510, 511, 801, 515, 509, 516, 512, 508, 507, 506, 513, 514, 505, 504, 503, 502, 501, IC501
D	511, 508, 806, 805, 807, 804, 803, 801, 802, 506, 509, 507, 510, 516, 512, 505, 515, 514, 513, 503, 504, 502, 501, 517
ADJ	RV503, RV506, RV505, RV502, RV504, RV501

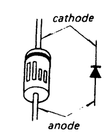



DC BLOCK
C board
G2
FOCUS
BRN
BLK
BLK
D board
24 1.7Vp-p(H)
28 11.5Vp-p(V)
31 1.3Vp-p(V)
29 3.9Vp-p(V)
30 4.6Vp-p(V)
27 230Vp-p(H)
26 48Vp-p(H)
23 4.6Vp-p(H)
25 4Vp-p(H)
22 32Vp-p
20 0.7Vp-p
21 25Vp-p
Q509 2SC2335
Q508 2SC1364
Q507 2SA733
Q513 2SC1419
Q516 2SC1364
Q510 2SA733
Q511 2SC1364
Q801 2SD1015
Q505 2SC1364
Q504 2SA733
Q502 2SC1364
Q501 2SC1364
IC501 µPC1031H
D801 HF1C
D802 HF1C
D803 V09C
D804 V09C
D805 V09C
D806 EQA01-06S
D807 N13T1
D515 1S1555
D516 1S1555
D508 1S1555
D518 1S1555
D517 RD11E-B3Z
D501 RD6.2EZ7S
D512 RD11E-BS
BATTERY STOP ADJ
RV503 4.7k
H.CENT
H.FREQ
V.LIN
V.SIZE
V.CENT
V.HOLD
RV504 20k
RV501 1k
28V ADJ
REG LIMIT
RV502
RV507 4.7k
F501 2.5A
C501 100/35V
T501 CDT
GRY WHT
VH VC
F board
A-1345-261-A
M-7
D-10
D-1
BLK
D-6
D-7
WHT
BLK
L902
L901
D-5
A-3
D-9
WHT
D-8
VIO RED ORG RED RED BLK
X-1
BRN RED BLK YEL BLK
F-2
BRN ORG
T901
SELECTION SWITCH
WHT BLK RED
ORG
U board
S902A
S902B
AC
(ON)
(OFF)
CH-1
CH-2
AC IN
F601 1.0A
EXT DC IN
R601 3.3M 1/2W
E-2
E-C
BAT
D-1
D-2
C601 0.001
S903A
S903B
DC
DCH
RED
J board
BLK
CHARGE
S901
21

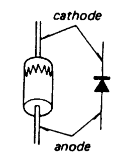




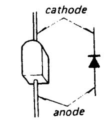
EQA01-06S
EQB01-06



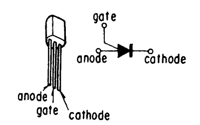
ERB81-004



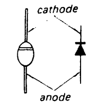
HF1
HF1C



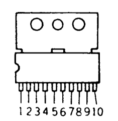
N13T1



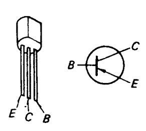
GH3F
V09C



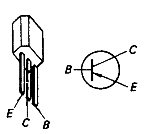
µPC1031H



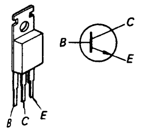
2SA733



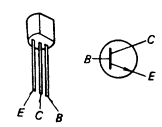
2SA1027R



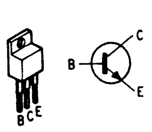
2SC1061
2SC1173
2SC1419



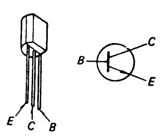
2SC1364



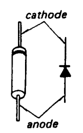
2SC2335



2SD1015



1S1555
RD6.2E
RD6.2E-Z7S
RD11E-B3Z
RD11E-BS



– A and K1 Boards –

- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.

Q IC	IC203 IC201 201 IC202 303 206 IC301 202 203 204 205 302 301	Q IC
D	202 205 204 301	D
ADJ	RV201 RV301 RV306 RV302 CV301 RV303 RV307 RV305 RV304 RV311 RV309 RV312 RV310 RV308	ADJ

2SC2009

1S1555
10E2
RD9.1E
RD9.1E-B3Z

SIB01-02

SP901 8Ω

RED YEL

K1 board BLK YEL BLK

J901

EARPHONE

A board

(1) 1.25Vp-p(H) (6) 0.5Vp-p(H) (5) 0.5Vp-p(H)

(3) 11Vp-p(H)

(2) 12Vp-p(H)

(15) 11.5Vp-p(H)

(14) 11.5Vp-p(V)

(12) 3.4Vp-p(H)

(11) 3.6Vp-p(H)

(13) 2.7Vp-p(H)

(4) 2.8Vp-p(H) (8) 6.1Vp-p(H) (9) 1.5Vp-p(H) (10) 6.6Vp-p(H)

(7) 1.2Vp-p(H)

A-1295-288-A

IF OUT UHF/VHF BT-854 (BLK)

J201 IF IN

CX095C

(Top view)

CX555A
CX555
CX556

(Top view)

LM386N

(Top view)

2SA733

2SA1027R

2SC1363
2SC1364

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

5-4. SCHEMATIC DIAGRAM

Note:

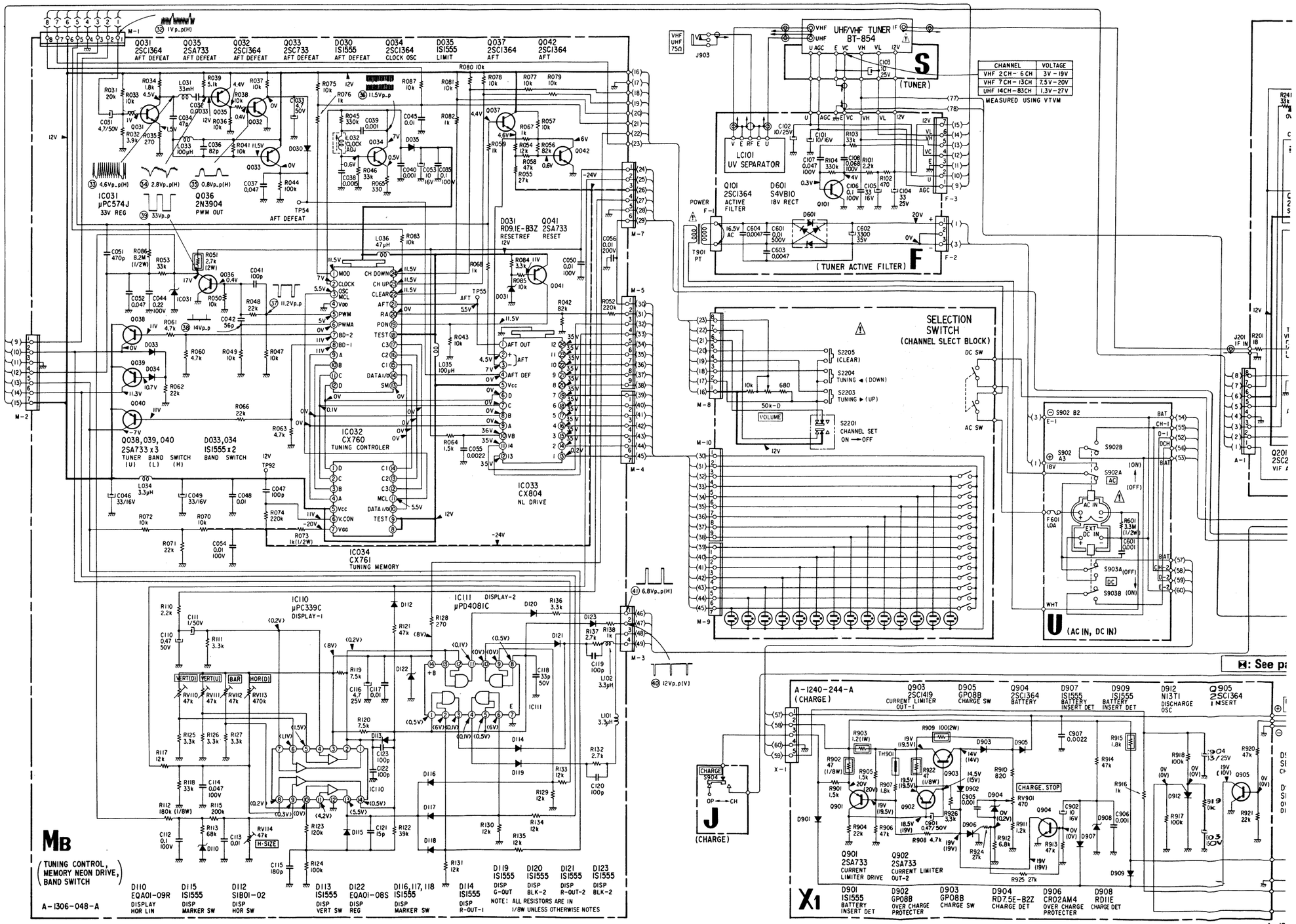
- All capacitors are in μF unless otherwise noted. 50WV or less are not indicated except for electrolytics. p : μμF
- All resistors are in ohms, ¼W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ
- ▭: nonflammable resistor.
- △ : internal component.
- ▭: panel designation.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- The components identified by ⧓ in this basic schematic diagram have been carefully factory selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- When replacing components identified by ◪, make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by ⧓ and repeat the adjustment unitl the specified value is achieved.

(Refer to R566 adjustment on page 24 and R567 adjustment on page 26.)

When replacing the part in below table, be sure to perform the related adjustment.

Part replaced (◪)	Adjustment
D510, D511, D512, R553 R565, R566	R566 adjustment
D501, R501, R502, R508 R509, R567, RV501 RV502	R567 adjustment

- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 20,000-ohm-per-volt VOM.
- Voltage variations may be noted due to normal production tolerances.
- ▭: adjustment for repair.
- Readings are taken with a color-bar signal input.
- ( ) : Set S904 to CH position with AC power supply and rechageable battery pack connected.
- < > : Set S2201 PROGRAM to ON position.
- Do not touch the base of Q510 marked ♦ on D board with VOM probe, as B+ voltage will not be supplied to the set.



D E F G H I J K

CHANNEL	VOLTAGE
VHF 2CH – 6CH	3V – 19V
VHF 7CH – 13CH	7.5V – 20V
UHF 14CH – 83CH	1.3V – 27V

MEASURED USING VTVM

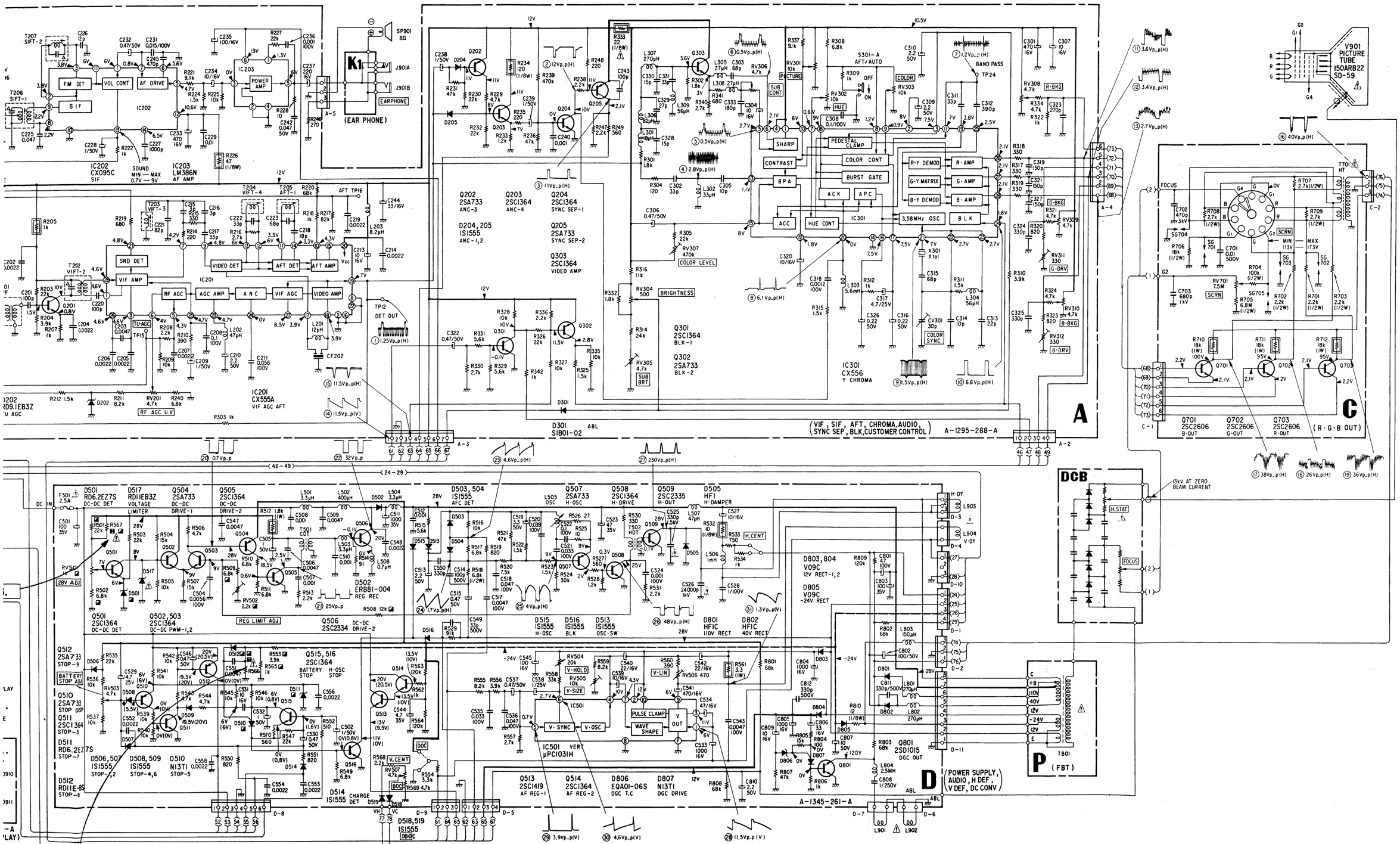
SELECTION SWITCH (CHANNEL SLECT BLOCK)

: See page 26.

: See page 24.

H I J K L M N O

1 2 3 4 5



: See page 24.

SCC-239B-B KV-5200 KV-5200 SCC-239B-B

SECTION 6
EXPLODED VIEWS

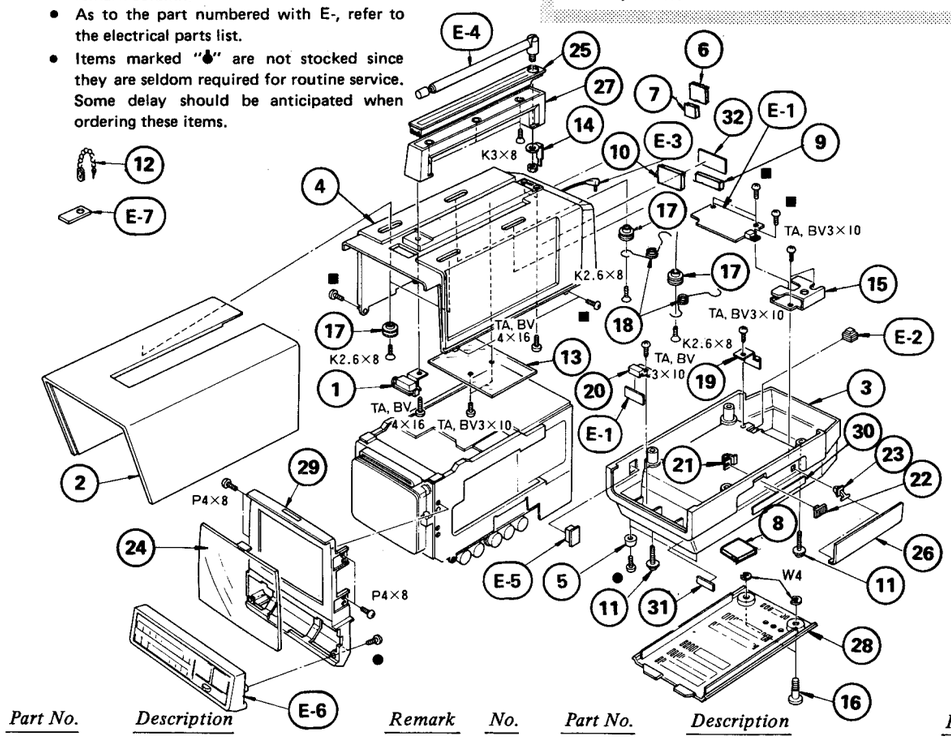
(1) CABINET

Note:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- All screws are Phillips (cross recess) type unless otherwise noted.
  (–) = slotted head
  ■ : TA, BV3 x 8
  ● : TA, BV3 x 12
  ▲ : TA, BV4 x 12
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- As to the part numbered with E-, refer to the electrical parts list.
- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- Les pièces avec une marque "♦" ne sont pas stockées parce qu'elles sont rarement nécessaires pour un dépannage de routine. Si nécessaire, demander les pièces en indiquant le numéro; seulement il faut s'attendre à un certain retard à la livraison.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

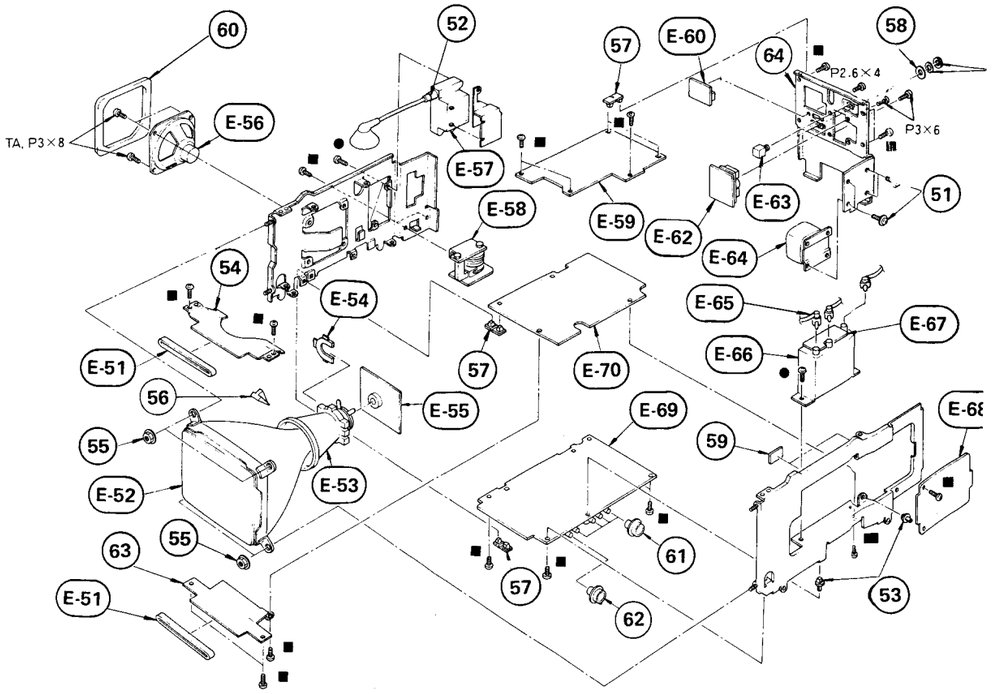


No.		Part No.	Description	Remark
1		X-4339-207-1	Button Ass'y	
2		X-4339-208-1	Hood Ass'y	
3		X-4339-302-0	Cabinet (lower) Ass'y	
4		X-4339-303-1	Cabinet (upper) Ass'y	
5		2-092-326-XX	Foot, rubber	
6		3-701-043-00	Label, CSA video	
7		3-701-827-01	X-RAY, certif.	
8		3-703-043-21	Caution, main	
9		3-703-053-00	Caution, screw	
10		3-703-281-00	DOC (A)	
11		4-306-021-00	Screw, +PW4 x 35	
12		4-308-870-00	Clip, lead wire	
13		4-339-206-00	Cover, hood	
14		4-339-209-00	Lug, antenna	
15	♦	4-339-215-00	Heat Sink, REG	
16		4-339-223-00	Screw, connecting	
17		4-339-225-00	Washer (B), slide	
18		4-339-226-00	Spring, hood	
19	♦	4-339-229-00	Retainer, connector	
20	♦	4-339-230-00	Holder, X board	
21		4-339-231-00	Spring	
22		4-339-232-00	Lever, door slide	
23		4-339-233-00	Shaft, door	
24		4-339-236-00	Filter	
25		4-339-240-00	Plate, ornamental; handle	
26		4-339-241-00	Door, adjustment	
27		4-339-244-00	Handle	
28		4-339-246-00	Cover, battery	
29		4-339-249-00	Mask	
30		4-339-303-00	Label, adjustment	
31	♦	4-339-306-00	Label, model number	
32		4-339-310-00	Label Cushion, power socket	

(2) PICTURE TUBE

Note: ● Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

● Les pièces avec une marque "♦" ne sont pa parce qu'elles sont rarement nécessaires pour nage de routine. Si nécessaire, demander les indiquant le numéro; seulement il faut s'atte certain retard à la livraison.



No.		Part No.	Description	Remark
51		3-701-809-11	Screw, terminal	
52	⚠	3-706-238-00	Cap, rubber	
53	♦	4-303-473-00	Support, circuit board	
54	♦	4-309-343-00	Shield (upper), picture tube	
55		4-309-346-00	Nut	
56		4-309-369-00	Spacer, DY	
57	♦	4-313-732-00	Clip, hinge, circuit board	
58	♦	4-339-205-00	Spacer	
59	♦	4-339-207-00	Cushion (C)	
60	♦	4-339-210-00	Cushion, speaker	
61		4-339-221-00	Knob, adjustment	
62		4-339-222-00	Knob, selection	
63	♦	4-339-234-00	Shield (lower), picture tube	
64	♦	4-339-245-00	Chassis, back	

Note: Les composants identifiés par une tram marque ⚠ sont critiques pour la sécurité remplacer que par une pièce portant le spécifié.

Note: The components identifie by shading an ⚠ are critical for safety Replace on part number specified.

(2) PICTURE TUBE

Note: • Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

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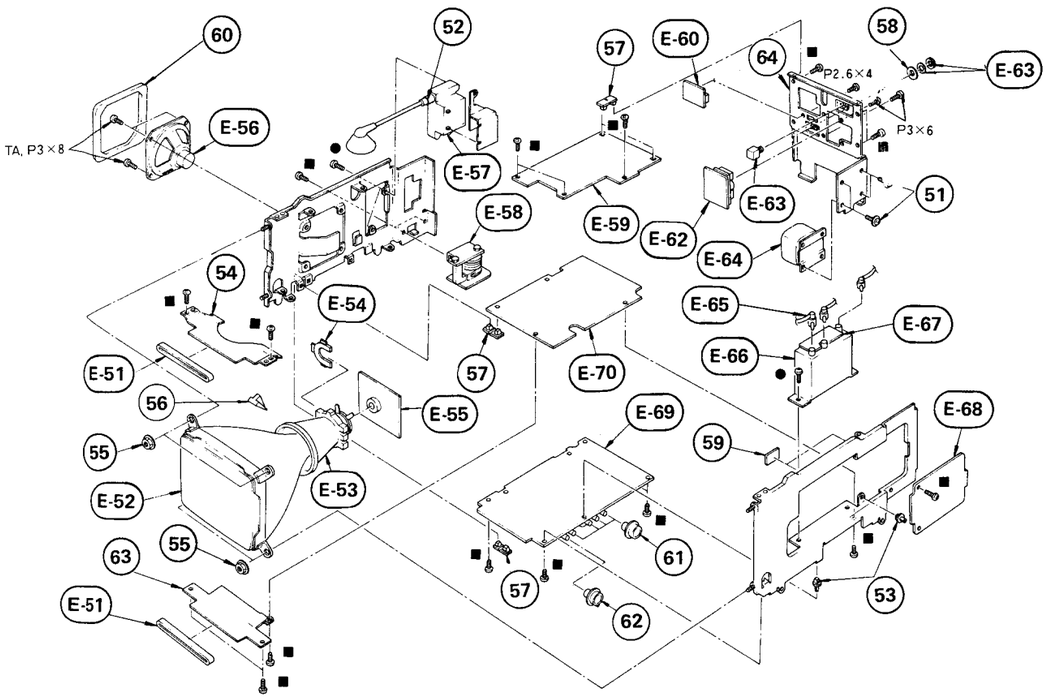

No.		Part No.	Description	Remark
51		3-701-809-11	Screw, terminal	
52	⚠	3-706-238-00	Cap, rubber	
53	♦	4-303-473-00	Support, circuit board	
54	♦	4-309-343-00	Shield (upper), picture tube	
55		4-309-346-00	Nut	
56		4-309-369-00	Spacer, DY	
57	♦	4-313-732-00	Clip, hinge, circuit board	
58	♦	4-339-205-00	Spacer	
59	♦	4-339-207-00	Cushion (C)	
60	♦	4-339-210-00	Cushion, speaker	
61		4-339-221-00	Knob, adjustment	
62		4-339-222-00	Knob, selection	
63	♦	4-339-234-00	Shield (lower), picture tube	
64	♦	4-339-245-00	Chassis, back	

Note: Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

SECTION 7
ELECTRICAL PARTS LIST

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- ⇒ : Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.
- ※ : selected to yield optimum performance.
- Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The components identified by ▣ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

CAPACITORS

- All capacitors are in μF and ceramic unless otherwise noted. 50WV or less are not indicated except for electrolytics. p : μμF, elect : electrolytic

RESISTORS

- All resistors are in ohms. Common ¼W carbon resistors are omitted. Refer to the list on page 69 for their part numbers.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
  kΩ : 1000Ω, MΩ : 1000kΩ

COILS

- All coils are microinductors unless otherwise noted.

- Les pièces avec une marque "♦" ne sont pas stockées parce qu'elles sont rarement nécessaires pour un dépannage de routine. Si nécessaire, demander les pièces en indiquant le numéro; seulement il faut s'attendre à un certain retard à la livraison.

Ref. No.

♦

C201
C202
C203
C204–207
C208

C209
C210
C211

C213

C214
C215, 216
C217
C218
C219

C220
C221
C222
C223
C225

C226
C227
C228
C229
C231

C232
C233
C234
C235
C236

C237
C238, 239
C240
C242
C243

C244

• Items mar
required f
cipated wl

SECTION 7
ELECTRICAL PARTS LIST

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

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A BOARD

Ref. No.	Part No.	Description			Remark
	♦ A-1295-288-A	A Board, complete			E-69
		CAPACITORS			
C201	1-102-106-00	100p			
C202	1-102-121-00	0.0022			
C203	1-161-047-00	0.0047			
C204–207	1-102-121-00	0.0022			
C208	1-108-389-00	0.1	100V	mylar	
C209	1-123-352-00	1	50V	elect	
C210	1-123-353-00	2.2	50V	elect	
C211	1-108-386-00	0.056	100V	mylar	
C213	1-123-316-00	10	16V	elect	
C214	1-102-121-00	0.0022			
C215, 216	1-102-503-00	3p			
C217	1-102-963-00	33p			
C218	1-102-513-00	18p			
C219	1-102-121-00	0.0022			
C220	1-102-106-00	100p			
C221	1-102-496-00	82p			
C222	1-102-518-00	33p			
C223	1-102-494-00	68p			
C225	1-101-006-00	0.047			
C226	1-102-666-00	12p			
C227	1-102-074-00	0.001			
C228	1-123-352-00	1	50V	elect	
C229	1-102-129-00	0.01			
C231	1-108-379-00	0.015	100V	mylar	
C232	1-123-351-00	0.47	50V	elect	
C233	1-123-323-00	470	16V	elect	
C234	1-123-316-00	10	16V	elect	
C235	1-123-320-00	100	16V	elect	
C236	1-108-365-00	0.001	100V	mylar	
C237	1-123-321-00	220	16V	elect	
C238, 239	1-123-352-00	1	50V	elect	
C240	1-102-074-00	0.001			
C242	1-101-006-00	0.047			
C243	1-102-973-00	100p			
C244	1-123-318-00	33	16V	elect	
C245	1-102-114-00	470p			
C301	1-123-323-00	470	16V	elect	
C302	1-102-963-00	33			
C303	1-101-888-00	68			
C304	1-123-316-00	10	16V	elect	
C305	1-102-947-00	10p			
C306	1-123-351-00	0.47	50V	elect	
C307	1-123-316-00	10	16V	elect	
C308	1-108-389-00	0.1	100V	mylar	
C309, 310	1-123-353-00	2.2	50V	elect	
C311	1-102-963-00	33p			
C312	1-102-823-00	390p			
C313	1-102-959-00	22p			
C314	1-102-947-00	10p			
C315	1-102-888-00	68p			
C316	1-123-447-00	0.22	50V	elect	
C317	1-123-328-00	4.7	25V	elect	
C318	1-108-366-11	0.0012	100V	mylar	
C319	1-101-361-00	150p			
C320	1-123-316-00	10	16V	elect	
C321	1-101-361-00	150p			
C322	1-123-351-00	0.47	50V	elect	
C323	1-102-111-00	270p			
C324, 325	1-102-112-00	330p			
C326	1-123-447-00	0.22	50V	elect	
C327	1-101-361-00	150p			
C328	1-101-951-00	15p			
C329	1-101-961-00	27p			
C330	1-101-951-00	15p			
C331	1-102-518-00	33p			
C333	1-102-976-00	180p			
CF201	1-527-260-00	Ceramic Filter			
CF202	1-409-332-00	Ceramic Trap			
CV301	1-141-212-00	Trimmer, 30p; COLOR SYNC			
		DIODES			
⇒D202	8-719-191-07	RD9.1E			
D204, 205	8-719-815-55	1S1555			
⇒D301	8-719-200-02	10E2			

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Ref. No.	Part No.	Description	Remark
		ICS	
⇒ IC201	8-759-600-05	CX555A	
IC202	8-759-600-95	CX095C	
IC203	8-759-903-86	LM386N	
IC301	8-759-105-56	CX556	
J201	1-526-575-00	Socket, plug; IF IN	
		COILS	
L201	1-407-158-XX	12μH	
L202	1-407-165-XX	47μH	
L203	1-407-189-XX	8.2μH	
L301	1-407-696-00	18μH	
L302	1-407-163-XX	33μH	
L303	1-408-310-00	5.6mH	
L304	1-407-166-XX	56μH	
L305	1-407-162-XX	27μH	
L306	1-407-168-XX	82μH	
L307	1-407-174-XX	270μH	
L308	1-407-162-XX	27μH	
L309	1-407-166-XX	56μH	
		TRANSISTORS	
Q201	8-765-300-00	2SC2009	
⇒ Q202	8-729-612-77	2SA1027R	
Q203, 204	8-729-663-47	2SC1364	
⇒ Q205	8-729-612-77	2SA1027R	
Q206,	8-729-663-47	2SC1364	
Q301	8-729-663-47	2SC1364	
⇒ Q302	8-729-612-77	2SA1027R	
Q303	8-729-663-47	2SC1364	
		RESISTORS	
R226	1-211-933-00	47 1/8W carbon (nonflammable)	
R234	1-210-357-00	120 1/8W carbon (nonflammable)	
R333	⚠ 1-211-417-00	22 1/8W carbon (nonflammable)	

Ref. No.	Part No.	Description	Remark
RV201	1-224-251-XX	4.7k, adjustable; RF AGC VN	
RV301	1-226-078-00	10k, variable; PIC	
RV302,303	1-226-075-00	10k, variable; HVE, COLOR	
RV304	1-226-408-00	500, variable; BRIGHTNESS	
RV305	1-224-251-XX	4.7k, adjustable; SVB. BRT	
RV306	1-224-251-XX	4.7k, adjustable; SVB. CONT	
RV307	1-224-134-XX	470k, adjustable; COLOR LEVEL	
RV308	1-224-251-XX	4.7k, adjustable; R. BKG	
RV309	1-224-251-XX	4.7k, adjustable; G. BKG	
RV310	1-224-251-XX	4.7k, adjustable; B. BKG	
RV311,312	1-221-986-00	330, adjustable; B. DRV	
S301-A-B	1-552-340-00	Switch, rotary; AUTO/AFT	
SF201	1-404-227-00	SAWF	
		TRANSFORMERS	
T201	1-404-228-00	VIFT-1	
T202	1-404-229-00	VIFT-2	
T203	1-404-181-00	VIFT-3	
T204	1-404-182-00	VIFT-4	
T205	1-404-181-00	AFT-1	
T206	1-403-367-00	SIF-1	
T207	1-403-871-00	SIFT-2	
X301	1-527-396-00	Crystal, OSC	

C BOARD

	♦ 1-601-281-00	C Board	E-55
		CAPACITORS	
C701	1-102-050-00	0.01 500V	
C702	1-161-753-00	470p 3kV	
C703	1-102-219-00	680p 1kV	
J701	1-509-545-00	Socket, picture tube	
		TRANSISTORS	
⇒ Q701–703	8-729-322-78	2SC2278	

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Ref. No.	Part No.	Description			Remark
		RESISTORS			
R701–703	1-244-881-00	2.2k	½W	composition	
R704	1-244-921-00	100k	½W	composition	
R705	1-202-729-00	6.8M	½W	composition	
R706	1-202-603-00	18k	½W	composition	
R707–709	1-202-583-00	2.7k	½W	composition	
R710–712	1-213-158-00	18k	1W	metal oxide (nonflammable)	
RV701	1-226-659-21	7.5M, adjustable; SCRN			
SG701–705	1-519-063-XX	Spark Gap			
T701	⚠ 1-442-071-00	Transformer, heater; H. T			

D BOARD

♦	A-1345-267-A	D Board, complete	E-59

CAPACITORS

C501	1-123-345-00	100	35V	elect
C502	1-123-352-00	1	50V	elect
C504	1-108-374-00	0.0056	100V	mylar
C505	1-123-352-00	1	50V	elect
C507	1-102-074-00	0.001		
C506	1-102-125-00	0.0047		
C508	1-102-375-00	0.001		
C509	1-102-125-00	0.0047		
C510	1-102-375-00	0.001		
C511	1-123-349-00	1000	35V	elect
C512	1-102-375-00	0.001		
C513	1-123-353-00	2.2	50V	elect
C514	1-101-810-00	100p	500V	
C515	1-123-351-00	0.47	50V	elect
C517	1-108-373-00	0.0047	100V	mylar
C518	1-108-385-00	0.047	100V	mylar
C519	1-123-354-00	3.3	50V	elect
C520	1-108-384-00	0.039	100V	mylar
C521	1-130-271-00	0.033	100V	polyethylene
C522	1-130-349-00	0.1	100V	polyethylene
C523	1-123-344-00	47	35V	elect
C524	1-108-365-00	0.001	100V	mylar
C525	⚠ 1-102-327-00	330p	1.5kV	
C526	⚠ 1-130-458-00	24000p	1kV	polyethylene
C527	1-123-316-00	10	16V	elect
C528	1-130-351-00	1	100V	polyethylene
C529	1-123-328-00	4.7	25V	elect
C530	1-123-351-00	0.47	50V	elect
C531	1-121-806-00	10	16V	elect (nonpolarized)
C532	1-123-352-00	1	50V	elect
C533	1-123-324-00	1000	16V	elect
C534	1-123-319-00	47	16V	elect
C535	1-108-383-00	0.033	100V	mylar
C536	1-108-385-00	0.047	100V	mylar
C537	1-123-351-00	0.47	50V	elect
C538	1-131-347-00	1	25V	tantalum
C539	1-123-316-00	10	16V	elect
C540	1-123-317-00	22	16V	elect
C541	1-123-323-00	470	16V	elect
C542	1-123-317-00	22	16V	elect
C543	1-108-373-00	0.0047	100V	mylar
C544	1-123-340-00	4.7	35V	elect
C545	1-123-320-00	100	16V	elect
C546	1-123-351-00	0.47	50V	elect
C547	1-102-125-00	0.0047		
C548	1-102-121-00	0.0022		
C549	1-102-233-00	33p	500V	
C550	1-102-112-00	330p		
C551	1-102-125-00	0.0047		
C552–556	1-102-121-00	0.0022		
C558	1-102-121-00	0.0022		
C801	1-123-387-00	47	100V	elect
C802	1-123-360-00	100	50V	elect
C803	1-123-345-00	100	35V	elect
C804, 805	1-123-324-00	1000	16V	elect
C806	1-123-318-00	33	16V	elect
C807	1-123-356-00	10	50V	elect
C808	1-130-352-00	1	250V	polyethylene
C809	1-123-316-00	10	16V	elect
C810	1-123-353-00	2.2	50V	elect
C811, 812	1-102-030-00	330p	500V	

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Ref. No.	Part No.	Description	Remark
		DIODES	
⇒D501	8-719-162-07	RD6.2E	
D502	8-719-982-04	ERB81-004	
D503, 504	8-719-815-55	1S1555	
⇒D505	8-719-305-15	GH3F	
D506–509	8-719-815-55	1S1555	
D510	8-729-101-31	N13T1	
⇒D511	8-719-162-07	RD6.2E	
⇒D512	8-719-111-26	RD11E-B3Z	
D513–516	8-719-815-55	1S1555	
D517	⚠ 8-719-111-26	RD11E-B3Z	
D518, 519	⚠ 8-719-815-55	1S1555	
D801, 802	8-719-320-31	HF1C	
D803–805	8-719-900-93	V09C	
⇒D806	8-719-931-06	EQB01-06	
D807	8-729-101-31	N13T1	
F501	⚠ 1-532-562-00	Fuse, 2.5A	
		IC	
IC501	8-759-110-31	μPC1031H	
		COILS	
L501	1-407-780-00	3.3μH	
L502	1-421-378-00	400μH	
L503	1-407-364-00	3.3μH	
L504	1-407-780-00	3.3μH	
L505	1-405-760-00	OSC	
L506	1-407-195-XX	1mH	
L507	1-459-155-00	47μH	
L508	1-407-365-00	0.7μH	
L801, 802	1-407-174-XX	270μH	
L803	1-407-171-XX	150μH	
L804	1-459-109-00	2.5mH	
		TRANSISTORS	
Q501–503	8-729-663-47	2SC1364	
⇒Q504	8-729-612-77	2SA1027R	
Q505	8-729-663-47	2SC1364	
Q506	8-729-133-40	2SC2334	
⇒Q507	8-729-612-77	2SA1027R	
Q508	8-729-663-47	2SC1364	
Q509	8-729-133-53	2SC2335	
⇒Q510	8-729-612-77	2SA1027R	
Q511	8-729-663-47	2SC1364	
⇒Q512	8-729-612-77	2SA1027R	
⇒Q513	8-729-316-12	2SC1061	
Q514–516	8-729-663-47	2SC1364	
⇒Q801	8-765-620-00	2SD1015	
		RESISTORS	
R512	1-213-146-00	1.8k 1W metal oxide (nonflammable)	
R518	1-244-893-00	6.8k ½W carbon	
R532	1-211-409-00	10 1/8W carbon (nonflammable)	
R553	1-214-146-00	3.9k ¼W metal oxide	
R561	1-212-366-00	3.3 1W metal oxide (nonflammable)	
R565	1-214-132-00	1.0k ¼W metal oxide	
⊠R566	⚠ ————	¼W metal oxide	
⊠R567	⚠ ————	¼W carbon	
R810	1-246-760-00	12 1/8W carbon	
RV501	1-224-249-XX	1k, adjustable; +28V ADJ	
RV502	1-224-250-XX	2.2k, adjustable; REG LIMIT ADJ	
RV503	1-224-251-XX	4.7k, adjustable; BATTERY STOP ADJ	
RV504	1-226-637-00	20k, variable; V. HOLD	
RV505	1-224-252-XX	10k, adjustable; V. SIZE	
RV506	1-224-248-XX	470, adjustable; V. LIN	
RV507	1-224-251-XX	4.7k, adjustable; DOC	
T501	1-437-081-00	Transformer, CDT	
T502	1-437-082-00	Transformer, HDT	

F BOARD

♦	1-601-283-00	F Board,	E-68
		CAPACITORS	
C101	1-123-317-00	22 16V elect	
C102	1-123-329-00	10 25V elect	

Note: • Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	*Part No.*	*Description*			*Remark*
C104	1-123-331-00	33	25V	elect	
C105	1-123-318-00	33	16V	elect	
C106	1-130-349-00	0.1	100V	polyethylene	
C107	1-108-385-00	0.047	100V	mylar	
C108	1-108-387-00	0.068	100V	mylar	
C601	1-102-050-00	0.01	500V		
C602	1-125-183-00	3300	35V	elect	
C603, 604	1-102-125-00	0.0047			
		DIODE			
D601	8-719-504-10	S4VB10			
LC101	1-417-060-00	Separator, UV			
		TRANSISTOR			
Q101	8-729-663-47	2SC1364			
		J BOARD			
	♦1-601-280-00	J Board			E-60
S904	1-516-576-00	Switch, slide; CHARGE			
		K1 BOARD			
	♦1-601-287-00	K1 Board			E-5
J901	1-507-663-00	Jack, EARPHONE			
		MB BOARD			
	♦A-1306-048-A	MB Board, complete			E-70
		CAPACITORS			
C031	1-123-355-00	4.7	50V	elect	
C032	1-102-123-00	0.0033			
C033	1-123-355-00	4.7	50V	elect	
C034	1-101-880-00	47p			
C035	1-130-349-00	0.1	100V	polyethylene	
C036	1-102-971-00	82p			
C037	1-101-006-00	0.047			
C038	1-130-020-00	0.0015		film	
C039, 040	1-130-018-00	0.001		film	
C041	1-102-106-00	100p			
C042	1-101-884-00	56p			
C044	1-130-350-00	0.22	100V	polyethylene	
C045	1-102-129-00	0.01			
C046	1-123-318-00	33	16V	elect	
C047	1-102-106-00	100p			
C048	1-161-051-00	0.01			
C049	1-123-318-00	33	16V		
C050	1-108-377-00	0.01	100V	mylar	
C051	1-102-114-00	470p			
C052	1-101-006-00	0.047			
C053	1-123-316-00	10	16V	elect	
C054	1-108-377-00	0.01	100V	mylar	
C055	1-102-121-00	0.0022			
C056	1-108-421-00	0.01	200V	mylar	
C110	1-123-351-00	0.47	50V	elect	
C111	1-123-352-00	1	50V	elect	
C112	1-130-349-00	0.1	100V	polyethylene	
C113	1-102-129-00	0.01			
C114	1-108-385-00	0.047	100V	mylar	
C115	1-102-848-00	180p			
C116	1-123-328-00	4.7	25V	elect	
C117	1-101-004-00	0.01			
C118	1-102-963-00	33p			
C119, 120	1-102-973-00	100p			
C121	1-102-668-00	15p			
C122	1-102-973-00	100p			
C123	1-102-106-00	100p			
		DIODES			
D030	8-719-815-55	1S1555			
⇒D031	8-719-191-07	RD9.1E			
D033–035	8-719-815-55	1S1555			

• Les pièces avec une marque "♦" ne sont pas stockées parce qu'elles sont rarement nécessaires pour un dépannage de routine. Si nécessaire, demander les pièces en indiquant le numéro; seulement il faut s'attendre à un certain retard à la livraison.

Note: • Items marked "♦" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Ref. No.	Part No.	Description	Remark
⇒D110	8-719-931-09	EQB01-09	
⇒D112	8-719-200-02	10E2	
D113–121	8-719-815-55	1S1555	
⇒D122	8-719-931-08	EQB01-08	
D123	8-719-815-55	1S1555	
		ICS	
IC031	8-759-157-40	μPC574J	
IC032	8-757-600-00	CX760	
IC033	8-758-040-00	CX804	
IC034	8-757-610-00	CX761	
IC110	8-759-133-90	μPC339C	
IC111	8-759-140-81	μPD4081C	
		COILS	
L031	1-407-879-00	33mH	
L032	1-409-193-00	3.58mH	
L033	1-407-169-XX	100μH	
L034	1-407-184-XX	3.3μH	
L035	1-407-169-XX	100μH	
L036	1-407-165-XX	47μH	
L101, 102	1-407-184-XX	3.3μH	
		TRANSISTORS	
Q031, 032	8-729-663-47	2SC1364	
⇒Q033	8-729-612-77	2SA1027R	
Q034	8-729-663-47	2SC1364	
⇒Q035	8-729-612-77	2SA1027R	
Q036	8-729-139-04	2N3904	
Q037	8-729-663-47	2SC1364	
⇒Q038–041	8-729-612-77	2SA1027R	
Q042	8-729-663-47	2SC1364	
		RESISTORS	
R031	1-246-859-00	20k 1/8W carbon	
R032	1-246-790-00	3.9k 1/8W carbon	
R033	1-246-795-00	10k 1/8W carbon	
R034	1-246-786-00	1.8k 1/8W carbon	
R035	1-246-776-00	270 1/8W carbon	
R036–038	1-246-795-00	10k 1/8W carbon	

Ref. No.	Part No.	Description	Remark
R039	1-246-852-00	5.1k 1/8W carbon	
R041	1-246-795-00	10k 1/8W carbon	
R042	1-246-806-00	82k 1/8W carbon	
R043	1-246-795-00	10k 1/8W carbon	
R044	1-246-807-00	100k 1/8W carbon	
R045	1-247-047-00	330k 1/8W carbon	
R046	1-246-801-00	33k 1/8W carbon	
R047	1-246-795-00	10k 1/8W carbon	
R048	1-246-799-00	22k 1/8W carbon	
R049, 050	1-246-795-00	10k 1/8W carbon	
R051	1-246-674-00	2.7k 2W metal oxide (nonflammable)	
R052	1-246-811-00	220k 1/8W carbon	
R053	1-246-801-00	33k 1/8W carbon	
R054	1-246-796-00	12k 1/8W carbon	
R055	1-246-800-00	27k 1/8W carbon	
R056	1-246-806-00	82k 1/8W carbon	
R057	1-246-795-00	10k 1/8W carbon	
R058	1-246-803-00	47k 1/8W carbon	
R059	1-246-783-00	1.0k 1/8W carbon	
R060, 061	1-246-791-00	4.7k 1/8W carbon	
R062	1-246-799-00	22k 1/8W carbon	
R063	1-246-791-00	4.7k 1/8W carbon	
R064	1-246-785-00	1.5k 1/8W carbon	
R065	1-246-777-00	330 1/8W carbon	
R066	1-246-799-00	22k 1/8W carbon	
R067, 068	1-246-783-00	1.0k 1/8W carbon	
R070	1-246-795-00	10k 1/8W carbon	
R071	1-246-799-00	22k 1/8W carbon	
R072	1-246-795-00	10k 1/8W carbon	
R073	1-244-873-00	1k ½W carbon	
R074	1-246-811-00	220k 1/8W carbon	
R075	1-246-795-00	10k 1/8W carbon	
R076	1-246-783-00	1.0k 1/8W carbon	
R077–081	1-246-795-00	10k 1/8W carbon	
R082	1-246-783-00	1.0k 1/8W carbon	
R083	1-246-795-00	10k 1/8W carbon	
R084	1-246-789-00	3.3k 1/8W carbon	
R085	1-246-795-00	10k 1/8W carbon	
R086	1-202-667-00	8.2M ½W composition	
R087	1-246-795-00	10k 1/8W carbon	

Ref. No.	Part No.	Description			Remark
R110	1-246-787-00	2.2k	1/8W	carbon	
R111	1-246-789-00	3.3k	1/8W	carbon	
R112	1-246-810-00	180k	1/8W	carbon	
R113	1-246-805-00	68k	1/8W	carbon	
R115	1-246-871-00	200k	1/8W	carbon	
R117	1-246-796-00	12k	1/8W	carbon	
R118	1-246-801-00	33k	1/8W	carbon	
R119, 120	1-246-854-00	7.5k	1/8W	carbon	
R121	1-246-803-00	47k	1/8W	carbon	
R122	1-246-802-00	39k	1/8W	carbon	
R123	1-246-808-00	120k	1/8W	carbon	
R124	1-246-807-00	100k	1/8W	carbon	
R125–127	1-246-789-00	3.3k	1/8W	carbon	
R129–131, R133–135	1-246-796-00	12k	1/8W	carbon	
R136	1-246-789-00	3.3k	1/8W	carbon	
R138	1-246-783-00	1.0k	1/8W	carbon	
RV110	1-224-254-XX	47k, adjustable; VERT (D)			
RV111	1-224-254-XX	47k, adjustable; VERT (U)			
RV112	1-224-254-XX	47k, adjustable; BAR			
RV113	1-224-255-XX	470k, adjustable; HOR (D)			
RV114	1-224-254-XX	47k, adjustable; H. SIZE ADJ			

P BOARD

	♦1-601-284-00	P Board			E-58
T801	⚠1-439-249-00	Transformer, flyback; FBT			

S BOARD

	♦1-601-285-00	S Board			E-67
C103	1-123-329-00	10	25V	elect	

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Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
		U BOARD			
	♦1-601-286-00	U Board			E-62
F601	⚠1-532-536-00	Fuse 1A			
C601	1-102-074-00	0.001			
R601	⚠1-202-725-00	3.3M	½W	composition	
S902, 903	⚠1-561-436-00	Connector, AC/DC			
		X1 AND X2 BOARDS			
	♦A-1240-244-A	X Board, complete			E-1
		CAPACITORS			
C901	1-123-351-00	0.47	50V	elect	
C902	1-123-316-00	10	16V	elect	
C903	1-123-352-00	1	50V	elect	
C904	1-123-331-00	33	25V	elect	
C905, 906	1-102-074-00	0.001			
C907	1-102-121-00	0.0022			
		DIODES			
D901	8-719-815-55	1S1555			
⇒D902, 903	8-719-911-55	U05G			
⇒D904	8-719-931-08	EQB01-08			
⇒D905	8-719-911-55	U05G			
⇒D906	8-719-901-24	CV12E			
D907	8-719-815-55	1S1555			
D908	8-719-111-07	RD11E			
D909	8-719-815-55	1S1555			
D910	8-719-303-03	SEL303E			
D911	8-719-301-03	SEL103R			
D912	8-729-101-31	N13T1			

• Les pièces avec une marque "♦" ne sont pas stockées parce qu'elles sont rarement nécessaires pour un dépannage de routine. Si nécessaire, demander les pièces en indiquant le numéro; seulement il faut s'attendre à un certain retard à la livraison.

Note: Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	*Part No.*	*Description*	*Remark*
		TRANSISTORS	
⇒Q901, 902	8-729-612-77	2SA1027R	
⇒Q903	8-729-316-12	2SC1061	
Q904, 905	8-729-663-47	2SC1364	
		RESISTORS	
R902	1-211-933-00	47 1/8W carbon (nonflammable)	
R903	1-212-361-00	1.2 1W metal oxide	
R909	1-206-640-00	100 2W metal oxide (nonflammable)	
R922	1-211-933-00	47 1/8W carbon (nonflammable)	
RV901	1-224-248-XX	470, adjustable; CHARGE	
TH901	1-800-626-00	Thermistor	
		MISCELLANEOUS	
J903	1-507-569-00	Jack, VHF/UHF 75Ω	E-63
J904	1-507-549-00	Connector, power; BATTERY IN	E-2
L901, 902	⚠ 1-426-023-00	Coil, degaussing	E-51
L903, 904	⚠ 1-451-177-00	Deflection Yoke, DY	E-53
SP901	1-502-873-00	Speaker, 8Ω	E-56
T901	⚠ 1-446-517-00	Transformer, power; PT	E-64
V901	⚠ 8-736-201-05	Picture Tube, 150ARB22 (SD-59)	E-52
	1-452-126-11	Magnet	E-7
	1-452-192-00	Magnet, correct BMC	E-54
	⚠ 1-453-082-00	High-Voltage Block, DCB	E-57
	⚠ 1-463-285-00	UHF/VHF Tuner, BT-854	E-66
	1-501-157-XX	Antenna, telescopic	E-4
	1-506-369-21	Plug, with lead	E-3
	⚠ 1-553-077-00	Channel Select Block	E-6
	1-553-146-00	Holder, fuse	
	● 1-555-005-00	Cable P-P	E-65
	● 1-555-006-00	Cable, with pin	

ACCESSORIES AND PACKING MATERIALS

Part No.	*Description*
1-504-034-32	Earphone, ME-20B
⚠ 1-551-399-22	Cord, with 2P plug
3-650-155-00	Bag, polyethylene
3-701-352-00	Bag, polyethylene
4-339-220-00	Base, indicator label
4-339-253-00	Cushion, front
4-339-254-00	Cushion, rear
4-339-305-00	Indicator, label
4-339-312-00	Carton
4-491-299-32	Card, warranty
4-495-875-31	Manual, instruction
A-1000-548-A	Connector, antenna; EAC-6A

- Les pièces avec une marque "●" ne sont pas stockées parce qu'elles sont rarement nécessaires pour un dépannage de routine. Si nécessaire, demander les pièces en indiquant le numéro; seulement il faut s'attendre à un certain retard à la livraison.

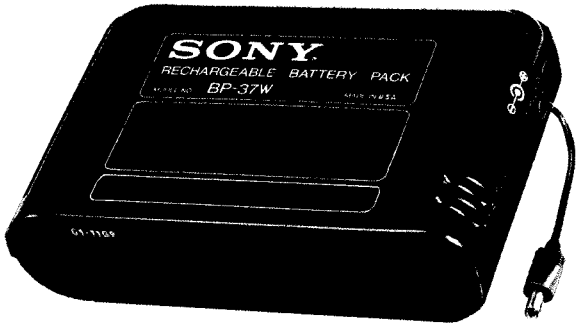
- Items marked "●" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

BP-37W

(OPTIONAL ACCESSORY)



RECHARGEABLE BATTERY PACK

SPECIFICATIONS

Operating Temperature:	0°C to +40°C (+32°F to +104°F)
Voltage:	12 V (nominal)
Capacity:	5 Ah
Recharging Time:	Approx. 12 hours
Dimensions:	Approx. 181 (w) x 46 (h) x 124 (d) mm 7 ¼ (w) x 1 13/16 (h) x 5 (d) inches excluding cord
Net Weight:	Approx. 2.4 kg (5 lb 5 oz)

BP-37W is only performed to replace the fuse.

Perform following procedure for replacing the fuse.

1. Pell the adhesive tape on the rear panel.
2. Pull out the fuse.
3. Unsolder leads and replace new one.
4. Isolate the fuse and leads by a vinyl tube or equivalent.
5. Put in the fuse into the case and stick the adhesive tape on it.

⚠ 1-532-272-XX Fuse, 5A 125V

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

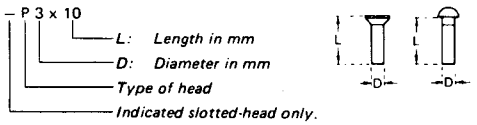
Note: Les composants identifiés par une trame et une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

1/4 WATT CARBON RESISTORS

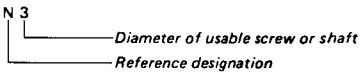
Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-576-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-577-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-578-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-579-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-580-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-581-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-582-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-583-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-584-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-585-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-586-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-587-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

HARDWARE NOMENCLATURE

Screw:



Nut, Washer, Retaining ring:



Reference Designation	Shape	Description	Remarks
SCREWS			
P		pan-head screw	binding-head (B) screw for replacement
PWH		pan-head screw with washer face	binding-head (B) screw and flat washer for replacement
PS PSP		pan-head screw with spring washer	binding-head (B) screw and spring washer for replacement
PSW PSPW		pan-head screw with spring and flat washers	binding-head (B) screw and spring and flat washers for replacement
R		round-head screw	binding-head (B) screw for replacement
K		flat-countersunk-head screw	
RK		oval-countersunk-head screw	
B		binding-head screw	
T		truss-head screw	binding-head (B) screw for replacement
F		flat-fillister-head screw	
RF		fillister-head screw	
BV		braizer-head screw	

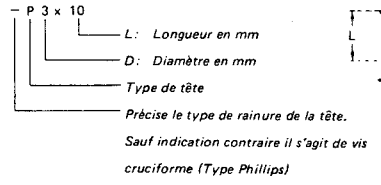
Reference Designation	Shape	Description	Remarks
SELF-TAPPING SCREWS			
TA		self-tapping screw	ex: TA, P 3 x 10
PTP		pan-head self-tapping screw	binding-head self-tapping (TA, B) screw for replacement
PTPWH		pan-head self-tapping screw with washer face	binding-head self tapping (TA, B) screw and flat washer for replacement
PTTWH		pan-head thread-rolling screw with washer face	binding-head (B) screw and flat washer for replacement
SET SCREWS			
SC		set screw	
SC		hexagon-socket set screw	ex: SC 2.6 x 4, hexagon socket
NUT			
N		nut	
WASHERS			
W		flat washer	
SW		spring washer	
LW		internal-tooth lock washer	ex: LW3, internal
LW		external-tooth lock washer	ex: LW3, external
RETAINING RINGS			
E		retaining ring	
G		grip-type retaining ring	

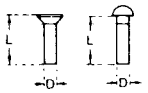
RESISTANCES DE 1/4 W AU CARBONE

Ω	Pièce N°	Ω	Pièce N°	Ω	Pièce N°	Ω	Pièce N°	Ω	Pièce N°	Ω	Pièce N°	Ω	Pièce N°
1.0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1.1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1.1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1.1M	1-210-814-00
1.2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1.2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1.2M	1-210-815-00
1.3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1.3k	1-246-576-00	13k	1-246-500-00	130k	1-246-524-00	1.3M	1-210-816-00
1.5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1.5k	1-246-577-00	15k	1-246-501-00	150k	1-246-525-00	1.5M	1-210-817-00
1.6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1.6k	1-246-578-00	16k	1-246-502-00	160k	1-246-526-00	1.6M	1-210-818-00
1.8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1.8k	1-246-579-00	18k	1-246-503-00	180k	1-246-527-00	1.8M	1-210-819-00
2.0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2.0k	1-246-580-00	20k	1-246-504-00	200k	1-246-528-00	2.0M	1-210-820-00
2.2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2.2k	1-246-581-00	22k	1-246-505-00	220k	1-246-529-00	2.2M	1-210-821-00
2.4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2.4k	1-246-582-00	24k	1-246-506-00	240k	1-246-530-00	2.4M	1-244-754-00
2.7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2.7k	1-246-583-00	27k	1-246-507-00	270k	1-246-531-00	2.7M	1-244-755-00
3.0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3.0k	1-246-584-00	30k	1-246-508-00	300k	1-246-532-00	3.0M	1-244-756-00
3.3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3.3k	1-246-585-00	33k	1-246-509-00	330k	1-246-533-00	3.3M	1-244-757-00
3.6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3.6k	1-246-586-00	36k	1-246-510-00	360k	1-246-534-00	3.6M	1-244-758-00
3.9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3.9k	1-246-587-00	39k	1-246-511-00	390k	1-246-535-00	3.9M	1-244-759-00
4.3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4.3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4.3M	1-244-760-00
4.7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4.7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4.7M	1-244-761-00
5.1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5.1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5.1M	1-244-762-00
5.6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5.6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6.2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6.2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6.8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6.8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7.5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7.5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8.2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8.2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9.1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9.1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

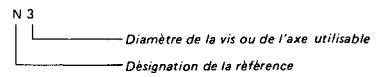
NOMENCLATURE FERRONNERIE

Vis:


– P 3 x 10
L: Longueur en mm
D: Diamètre en mm
Type de tête
Précise le type de rainure de la tête.
Sauf indication contraire il s'agit de vis cruciforme (Type Phillips)



Ecrou, Rondelle, Circlips:



Désignation de la référence	Forme	Description	Remarques
		VIS	
P		Vis à tête cylindrique large	Peut être remplacée par une vis à tête cylindrique (B).
PWH		Vis à tête cylindrique large et rondelle fixe.	Peut être remplacée par une vis à tête cylindrique (B) et une rondelle fixe.
PS PSP		Vis à tête cylindrique large et rondelle à ressort fixe.	Peut être remplacée par une vis à tête cylindrique (B) et une rondelle à ressort.
PSW PSPW		Vis à tête cylindrique large et rondelles plate et à ressort.	Peut être remplacée par une vis à tête cylindrique (B) et une rondelle plate plus une rondelle plate plus une rondelle à ressort.
R		Vis à tête ronde	Peut être remplacée par une vis à tête cylindrique (B).
K		Vis à tête fraisée	
RK		Vis à tête fraisée bombée	
B		Vis à tête cylindrique	
T		Vis à tête ronde large	Peut être remplacée par une vis à tête cylindrique (B).
F		Vis à tête moulée plate	
RF		Vis à tête moulée	
BV		Vis à tête braizer	

Désignation de la référence	Forme	Description	Remarques
		VIS AUTOTARODEUSES	
TA		Vis autotarodeuse	ex: TA, P 3 x 10
PTP		Vis autotarodeuse à tête cylindrique large.	Peut être remplacée par une vis autotarodeuse à tête cylindrique (TA, B).
PTPWH		Vis autotarodeuse à tête cylindrique large et rondelle fixe.	Peut être remplacée par une vis autotarodeuse à tête cylindrique (TA, B) et une rondelle plate.
PTTWH		Vis à tyge filetée et tête cylindrique large avec rondelle fixe.	Peut être remplacée par une vis à tête cylindrique (B) et une rondelle plate.
		VIS DE SERRAGE	
SC		Vis de serrage	
SC		Vis de serrage à douille hexagonale	ex: SC 2,6 x 4, douille hexagonale
		ECROU	
N		Ecrou	
		RONDELLES	
W		Rondelle plate	
SW		Rondelle à ressort	
LW		Rondelle éventail denture intérieure	ex: LW3, intérieure
LW		Rondelle éventail denture extérieure	ex: LW3, extérieure
		CIRCLIPS	
E		Circlips	
G		Circlips à griffe	

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